Geometry – Model No (1)

[Q1] A) Choose the correct answer:

(1) The sum of interior angles of cyclic quadrilateral = ...°

a) 90 b) 180 c) 360 d) 720

(2) The area of circle 25 π cm², straight line L of distant 5 cm of its center, then L is ....

a) Outside circle
b) Secant of circle
c) Tangent to circle
d) Passing through center

(3) If ABCDEF is regular hexagon drawn inside circle, m $(\widehat{AB})$=...

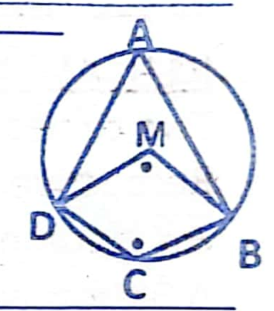
a) 60° b) 90° c) 180° d) 360°

[B] In the opposite figure:

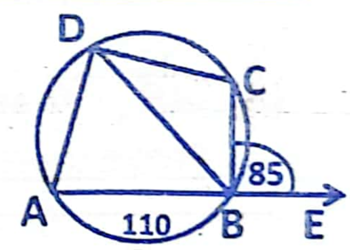
ABCD is quadrilateral drawn inside circle M

m (∠ BMD) = m (∠ BCD).

Find m (∠ A) in degrees



[Q2] Choose the correct answer:



(1) In the opposite figure:

If E ∈ $\overrightarrow{AB}$, m (∠EBC) = 85°, m$(\widehat{AB})$ = 110°

Then m(∠BDC) = ...°

a) 30 b) 55 c) 85 d) 110

(2) The altitudes of obtuse triangle intersect at point lies ....

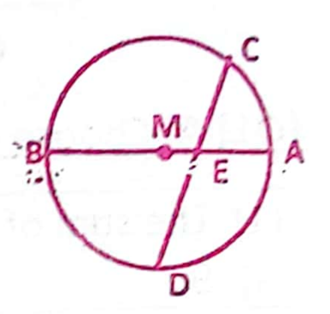
a) Inside triangle
b) Outside triangle
c) On one of its vertices
d) Midpoint of opposite side to obtuse angle

(3) Length of arc of half circle = ... Unit length

a) $2\pi r$ b) πr c) $\frac{1}{2}\pi r$ d) $\frac{1}{3}\pi r$

[B] ABCD is parallelogram, AC = BC, prove that $\overleftrightarrow{CD}$ is tangent to the circumcircle of Δ ABC

[Q3] [A] In the opposite figure:

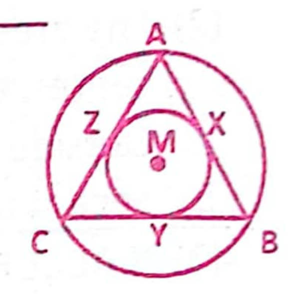


$\overline{AB}$ is diameter in circle M, $\overline{AB} \cap \overline{CD} = \{ E \}$

m ($\widehat{AD}$) = m ($\widehat{BD}$) = 3 m ($\widehat{AC}$)

Find m (∠ AEC)

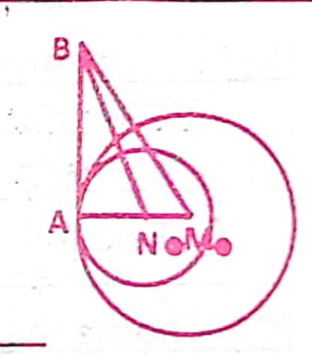
[B] **In the opposite figure**



Two concentric circles, Δ ABC is drawn in which its vertices lie on greater circle and its sides touch the smaller circle in X, Y, Z.

Prove that: Δ ABC is an equilateral triangle.

[Q4] [A] In the opposite figure:

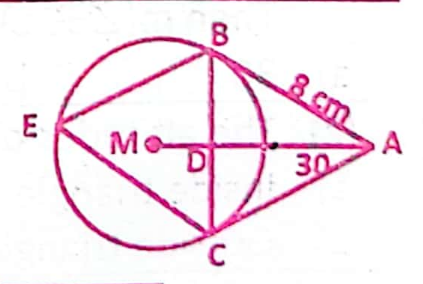


Two circles M, N, their radii 10 cm, 6 cm Respectively and touching internally at A, $\overline{AB}$ is common tangent at A, if area of Δ BMN = 24 cm^2, Find the length of $\overline{AB}$

[B] $\overline{AB}$, $\overline{CD}$ are two parallel chords in circle M, $\overline{AD} \cap \overline{CD} = \{ E \}$

Prove that: Δ EAB is an isosceles triangle.

[Q5] [A] In the opposite figure:

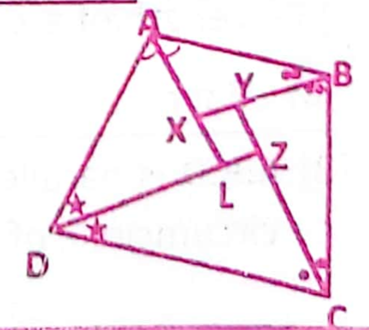


$\overline{AB}$, $\overline{AC}$ are two tangent of circle M at B , C

$\overline{AM} \cap \overline{BC}$ = {D}, AB = 8 cm, m(∠CAM) = 30°

Find: ① Perimeter of Δ ABC ② m (∠ E)

[B] In the opposite figure:



ABCD is quadrilateral, $\overrightarrow{AX}$, $\overrightarrow{BY}$, $\overrightarrow{CZ}$, $\overrightarrow{DL}$

Bisects ∠ A , ∠B , ∠ C , ∠ D respectively

Prove that: the figure XYZL is cyclic quadrilateral

End of the questions

Geometry – Model No (2)

[Q1] A) Choose the correct answer:

(1) If the longest chord in a circle is 12 cm, its circumference =.......

a) 6π	b) 12π	c) 24π	d) 144π

(2) The radius of two circles M , N are 6 cm , 8 cm and MN = 14 cm, then the two circles are

a) Intersecting	b) Distant	c) One inside other	d) Touching externally

(3) The inscribed angel in half circle is ....

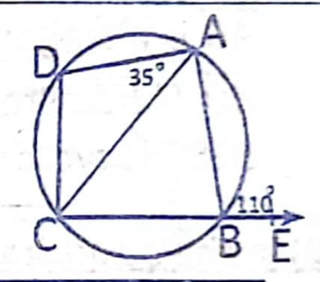
a) Acute	b) Straight	c) Right	d) obtuse

B): In the opposite figure:

ABCD is a cyclic quadrilateral, $E \in \overrightarrow{CB}$

$m(\angle ABE) = 110^\circ$, $m(\angle CAD) = 35^\circ$

Prove that: $m(\widehat{CD}) = m(\widehat{AD})$



[Q2] A) Choose the correct answer:

(1) A chord of length 8 cm drawn in a circle of diameter 10 cm, then the distance between the chord and the center of circle = ... cm

a) 2	b) 3	c) 4	d) 6

(2) Number of common tangents for two touching internally circles is

a) Zero	b) 1	c) 2	d) 3

(3) ABCD is cyclic quadrilateral, $m(\angle A) = 2\,m(\angle C)$, then $m(\angle A) =$ ...

a) 30°	b) 60°	c) 90°	d) 120°

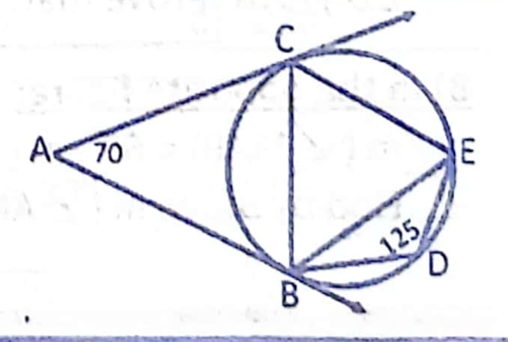
B): In the opposite figure:

$\overrightarrow{AB}$, $\overrightarrow{AC}$ are two tangents of the circle

$M(\angle A) = 70^\circ$, $m(\angle D) = 125^\circ$

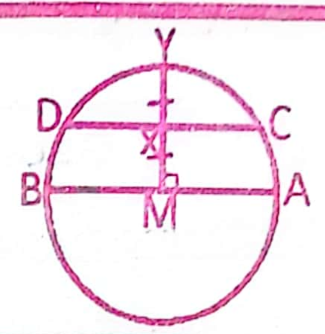
① Find $m(\angle ABC)$

② Prove that: BC = EB



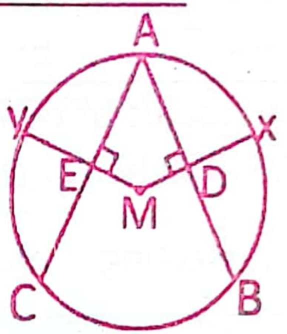
[Q3] A) In the opposite figure:

$\overline{AB}$ is diameter in the circle M
$\overline{CD} // \overline{AB}$, X is midpoint of $\overline{MY}$
$\overline{MY} \perp \overline{AB}$. Find m($\widehat{AC}$) , m ($\widehat{YC}$)



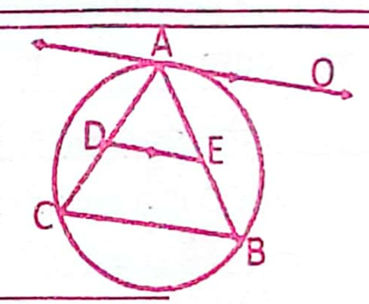
B) In the opposite figure:

$\overline{AB}$, $\overline{AC}$ are two equal chords in circle M
$\overrightarrow{MD} \perp \overline{AB}$, and cut the circle in X
$\overrightarrow{ME} \perp \overline{AC}$, and cut the circle in Y
Prove that: XD = YE



[Q4] A) In the opposite figure:

$\overleftrightarrow{AO}$ is a tangent to the circle M at A
$\overleftrightarrow{AO} // \overline{ED}$. Prove that:
DEBC is cyclic quadrilateral



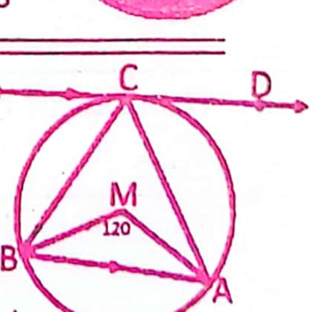
B) In the opposite figure:

Two concentric circles at M
$\overline{AB}$ is chord in the greatest circle
And touch the smallest circle at C
If AB = 14 cm. Find the area between two circles



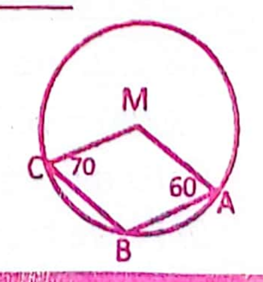
[Q5] A) In the opposite figure:

The circle M passes through vertices
Of Δ ABC, m(∠AMB) = 120°,
$\overleftrightarrow{CD}$ is tangent to the circle M at C
$\overleftrightarrow{CD} // \overline{AB}$. Prove that: Δ ABC is equilateral triangle



B) In the opposite figure:

m (∠ MAB) = 60°, m (∠ MCD) = 70°
Find by prove m (∠ AMC)



Geometry – Model No (3)

[Q1]: A) Choose the correct answer:

(1) The two tangents which are drawn from the two endpoints of a diameter of a circle are ....

a) Parallel b) Intersecting c) Equals d) Perpendicular

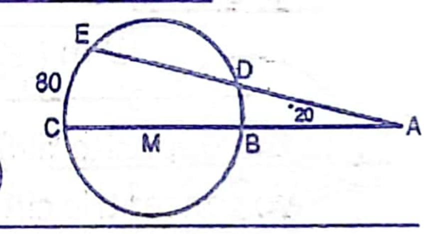
(2) A chord of length 8 cm, in a circle of radius 5 cm, then the distance between chord and the center of circle is .... Cm

a) 1 b) 2 c) 3 d) 4

(3) The measure of the central angle which is opposite to an arc of length $\frac{1}{3}\pi r$ equals ....°

a) 30 b) 60 c) 120 d) 240

B): In the opposite figure:



$\overline{BC}$ is a diameter of circle M,

m(∠A) = 20°, m($\widehat{CE}$) = 80°, find m ($\widehat{DE}$)

[Q2]: A) Choose the correct answer:

(1) Number of symmetric axes of two touching circles externally is...

a) 0 b) 1 c) 2 d) ∞

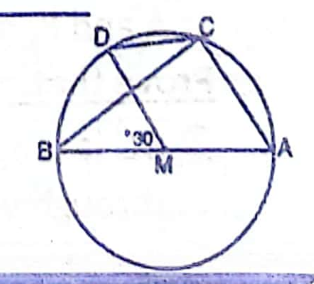
(2) If point A lies on surface of circle M and length of its diameter is 6 cm, then m ∈ ....

a)]−∞ , 6] b)]−∞ , 3] c) [0 , 3] d)]3 , ∞[

(3) ABCD is a quadrilateral inscribed in a circle, m(∠A) = 70°, then m(BAD) = ...°

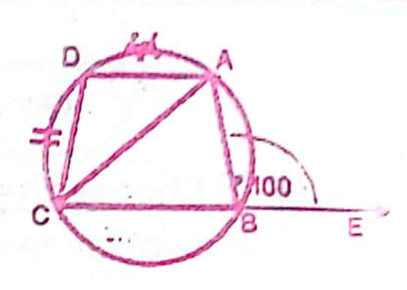
a) 35 b) 55 c) 140 d) 220

B): In the opposite figure:



$\overline{AB}$ is diameter in circle M, m (∠BMD) = 30°

Find: ① m (∠BCD) ② m (∠ACD)

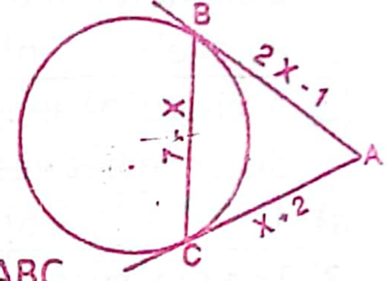


[Q3] **A): In the opposite figure:**

ABCD is a quadrilateral inscribed in a circle,

$E \in \overrightarrow{CB}$, m ($\angle ABE$) = 100°,

D is midpoint of $\widehat{AC}$, Find m ($\angle$ DAC)



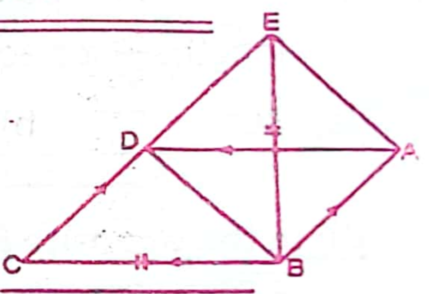
B): In the opposite figure:

$\overline{AB}$, $\overline{AC}$ are two tangent segments

To the circle at B and C, AB = 2 X − 1

AC = X + 2, BC = 7 − X, find:

① The value of X ② The perimeter of Δ ABC

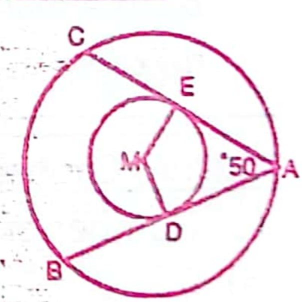


[Q4] **A): In the opposite figure:**

ABCD is a parallelogram, $E \in \overrightarrow{CD}$, BE = BC

Prove that: ① ABDE is cyclic quadrilateral

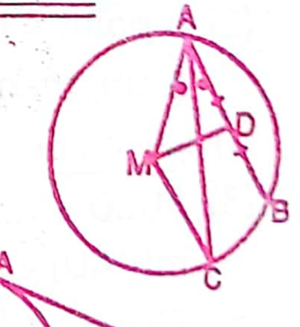
② m ($\angle$ AEB) = m ($\angle$ DBC)



B): In the opposite figure:

Two concentric circles at M, $\overline{AB}$ and $\overline{AC}$ are two chords in the greater circle and two tangent to smaller circle at D , E respectively, m ($\angle$A) = 50°

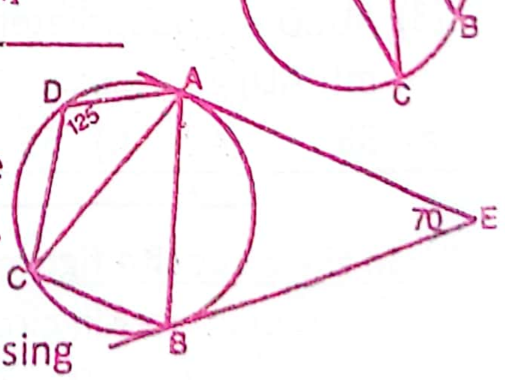
① **Find** m ($\angle$ EMD) ② **Prove that:** AB = AC



[Q5] **A): In the opposite figure:**

$\overline{AB}$ is chord in circle M, D midpoint of $\overline{AB}$

$\overrightarrow{AC}$ bisects $\angle$ BAM, prove that $\overline{DM} \perp \overline{CM}$



B): In the opposite figure:

$\overrightarrow{EA}$, $\overrightarrow{EB}$ are two tangents to the circle at A and B, m($\angle$E) = 70°, m ($\angle$D) = 125°.

Prove that: ① AB = AC

② $\overrightarrow{AC}$ is tangent to the circle which passing through vertices of Δ ABE

Geometry – Model No (4)

[Q1] A) Choose the correct answer:

(1) A circle of radius 4 cm and its center is origin point, which of the following points not belong to the circle?

a) (0 , 4) b) (4 , 0) c) (0 , −4) d) (4 , 4)

(2) If straight line L lies outside circle of diameter 10 cm, and the distance between L and center of circle is X, then X ∈ ....

a) [0 , 5] b)] 0 , 5 [c) [0 , 5 [d)] 5 , ∞ [

(3) In the opposite figure:

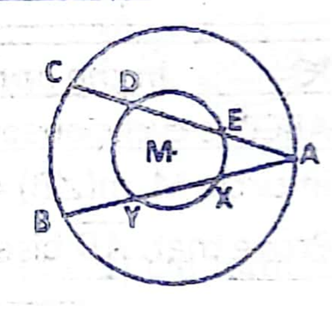
C is midpoint of $\widehat{AB}$,

Then AB .... 2 AC



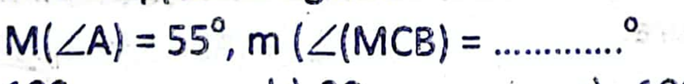
a) > b) < c) ≥ d) =

B): In the opposite figure: Two concentric circles at M, $\overline{AB}$ is chord in greater circle and cut smaller circle at X , Y, $\overline{AC}$ is chord in greater circle cut smaller circle in D , E , if AB = AC, **Prove that:** DE = XY



[Q2] A) Choose the correct answer:

(1) In the opposite figure:



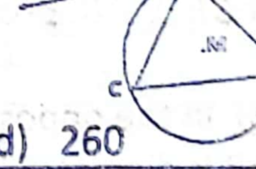
M(∠A) = 55°, m (∠(MCB) = ...°

a) 180 b) 90 c) 100 d) 110

(2) In the opposite figure:

$\overrightarrow{AD}$ is tangent to circle M at A,

m(∠DAB) = 130°, Then m(∠C) = ...°



a) 50 b) 65 c) 130 d) 260

(3) We can't draw circle passing through vertices of ....

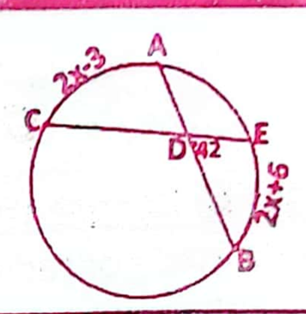
a) Parallelogram b) Square c) Rectangle d) Isosceles trapezium

B): In the opposite figure:

$\overline{AB} \cap \overline{EC} = \{D\}$, m(∠EDB) = 42°

M($\widehat{EB}$) = (2 X + 6)°, m ($\widehat{AC}$) = (3 X − 2)°

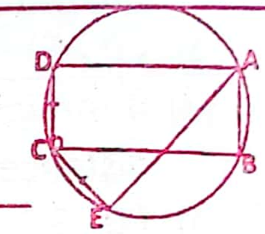
Find the value of C?



[Q3] A) In the opposite figure:

ABCD is a rectangle drawn in a circle

CD = CE, prove that: AE = BC



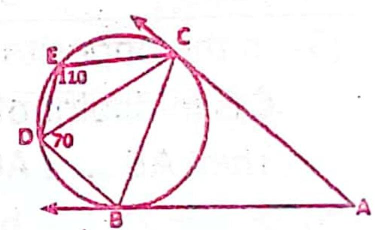
B) In the opposite figure:

$\overrightarrow{AB}$, $\overrightarrow{AC}$ are two tangents at B, C

M(∠E) = 110°, m(∠BDC) =70°

Prove that: ① $\overrightarrow{BC}$ bisects ∠ ABD

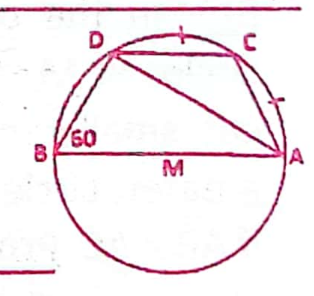
② $\overrightarrow{CD}$ is tangent to circle passes through vertices of Δ ABC



[Q4] A) In the opposite figure:

ABCD is cyclic quadrilateral, $\overline{AB}$ is diameter in circle M, m(∠B) = 60°, Length of $\widehat{AC}$ = length of $\widehat{CD}$

Prove that: $\overrightarrow{AD}$ bisects ∠ BAC



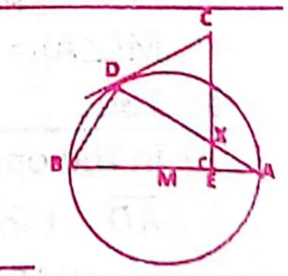
B) XYZL is a Parallelogram, ∠ X is acute angle, F ∈ $\overleftrightarrow{ZL}$, F ∉ $\overline{ZL}$ where YF = XL. Prove that XYLF is cyclic quadrilateral.

[Q5] A) In the opposite figure:

$\overline{AB}$ is diameter in circle M,

$\overline{CD}$ is tangent to circle D

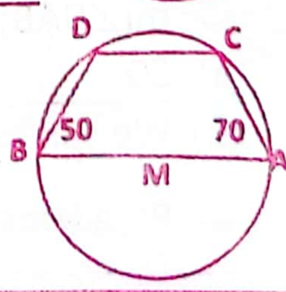
If $\overline{CE} \perp \overline{AB}$, prove that: CX = CD



B) In the opposite figure:

AB is diameter in circle M, its radius is 5 cm,

m(∠B) = 50°, m(∠A) = 70°, find the length of $\overline{CD}$



End of the question

GEOMETRY – MODEL NO (5)

[Q1] A) Choose the correct answer:

(1) If ABCD is square drawn in a circle, then m ($\widehat{AB}$) = ...°

a) 60 b) 90 c) 120 d) 180

(2) Number of common tangent for two touching internally circles is

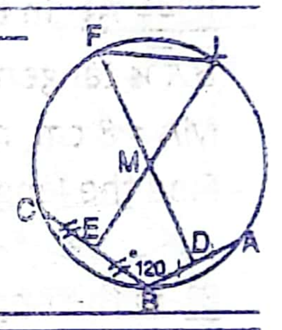
a) 1 b) 2 c) 3 d) Zero

(3) Center of all circles passes through two points A , B lies on ....

a) $\overline{AB}$ b) Axis of $\overline{AB}$

c) Midpoint of $\overline{AB}$ d) Perpendicular on axis of $\overline{AB}$

B): In the opposite figure:



$\overline{AB}$, $\overline{AC}$ are two chords in circle M of radius 7 cm , D, E midpoints of $\overline{AB}$, $\overline{AC}$, m(∠BAC) = 120°, Draw $\overrightarrow{DM}$, $\overrightarrow{EM}$ cut circle in F, L find length of $\overline{LF}$

[Q2] A) Choose the correct answer:

(1) Circle of area $X\pi$ cm², straight line L of distant (X + 1) cm form its center, then L lies .... Circle

a) Outside the b) Secant of c) Tangent of d) Axis of

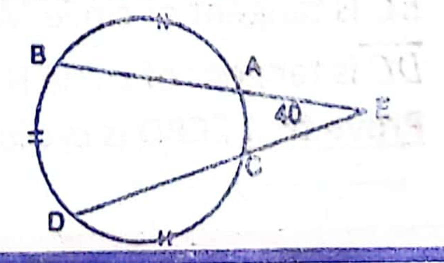
(2) In the opposite figure:
$\overline{MA} \perp \overline{MB}$,
Then m(∠ACB) = ... °

a) 90 b) 135 c) 110 d) 270

(3) The center of circumcircle of a triangle is intersection point of ....

a) Medians b) Altitudes c) Axes of its sides d) Bisectors of its angles

B): In the opposite figure:



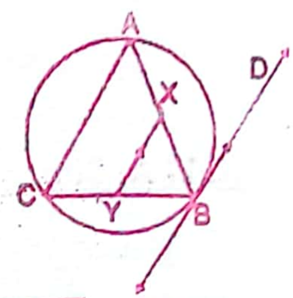
M ($\widehat{AB}$) = m ($\widehat{DB}$) = m ($\widehat{DC}$)
M (∠ C) = 40°, find m ($\widehat{AC}$)

[Q3] A) In the opposite figure:

ABC is triangle drawn in a circle,

$\overrightarrow{BD}$ is tangent, $\overline{BD} // \overline{XY}$

Prove that: AXYC is cyclic quadrilateral.

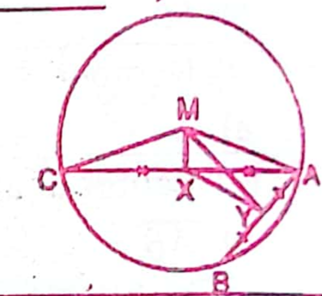


B) In the opposite figure:

X is midpoint of $\overline{AC}$, Y is midpoint of $\overline{AB}$

① Prove that: m (∠ MYX) = m (∠ MCX)

② $\overline{AM}$ is diameter in circle passes A , Y , X , M

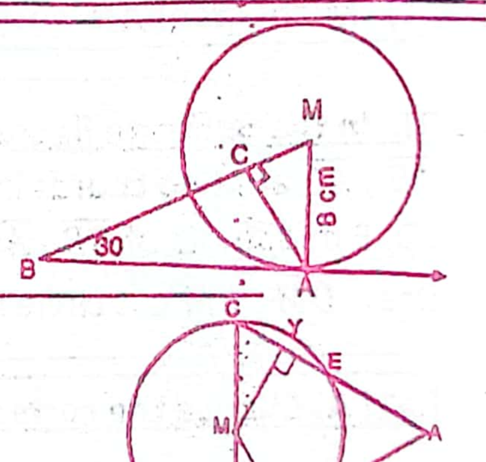


[Q4] A) In the opposite figure:

$\overrightarrow{BA}$ is tangent of circle M at A, $\overline{AC} \perp \overline{MB}$,

MA = 8 cm, m (∠B) = 30°

Find the length of $\overline{AB}$, $\overline{AC}$



B) In the opposite figure:

$\overline{BC}$ is diameter in circle M, $\overline{BD} \cap \overline{CE}$ = {A}

$\overline{MX} \perp \overline{AB}$, $\overline{MY} \perp \overline{AC}$, if AB = AC,

Prove that AD = AE

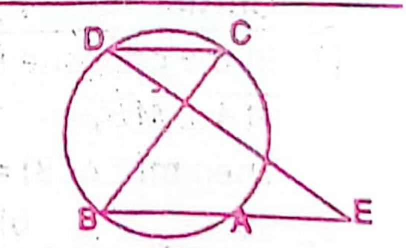
[Q5]



A) In the opposite figure:

E is a point outside the circle

Prove that: m(E) < m (BCD)



B) In the opposite figure:

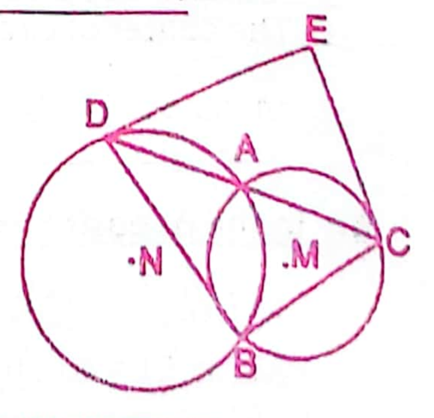
M , N are two circles intersecting at A, B

$\overleftrightarrow{EC}$ is tangent of circle M at C,

$\overleftrightarrow{DC}$ is tangent of circle N at D

Prove that ECBD is cyclic quadrilateral

End of the question



GEOMETRY – MODEL NO (6)

[Q1] A) Choose the correct answer:

(1) If the circumference of circle 36 cm, then measure of an arc of length 6 cm = ...°

a) 30 b) 60 c) 90 d) 120

(2) A circle M of diameter 8 cm, A point inside it, if MA = (3X−2) cm then X ∈ ....

a) $]-\infty, 2[$ b) $[\frac{2}{3}, 2[$ c) $]\frac{2}{3}, 6]$ d) $[2, \infty[$

(3) In the opposite figure:

$\overline{MA}$, $\overline{MB}$ two perpendicular radii

$\overleftrightarrow{DE}$ is axis of $\overline{MA}$, then $m(\angle \widehat{BD})$ = ...°

a) 30 b) 45 c) 90 d) 135

B): In the opposite figure:

$\overline{AC} \cap \overline{DB} = \{X\}$, XC = 6 cm

XD = 4 cm, XB = 3 cm, find length of $\overline{AX}$

[Q2] A) Choose the correct answer:

(1) In the opposite figure:

DX is diameter in circle M

$M(\angle E) = 40^\circ$, then $m(\angle A)$ = ...°

a) 20 b) 30 c) 40 d) 50

(2) We can't draw a circle passing through A, B and AB = 8 cm if its radius .... cm

a) 3 b) 4 c) 7 d) 8

(3) The axis of symmetry of common chord AB for intersecting circle at A, B is ....

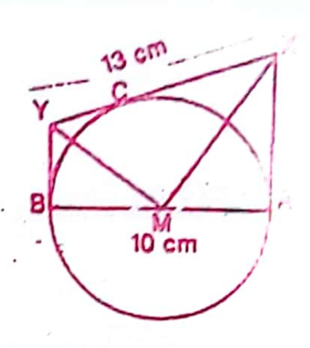
a) $\overleftrightarrow{MA}$ b) $\overleftrightarrow{MB}$ c) $\overleftrightarrow{MN}$ d) $\overleftrightarrow{AN}$

B) In the opposite figure:

$\overline{AB}$ is diameter in circle M, $\overline{BA} \cap \overline{DC} = \{E\}$

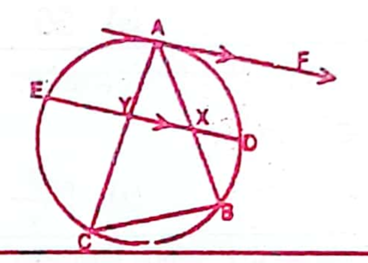
Prove that: EC > EA

[Q3] A) In the opposite figure:



$\overline{AB}$ is diameter in circle M, AB = 10 cm
If C ∈ circle M, draw a tangent at C
cut two tangents are drawn at A, B in X , Y, XY = 13 cm.
① **Prove** that : $\overline{XM} \perp \overline{YM}$ ② **Find** area of AXYB

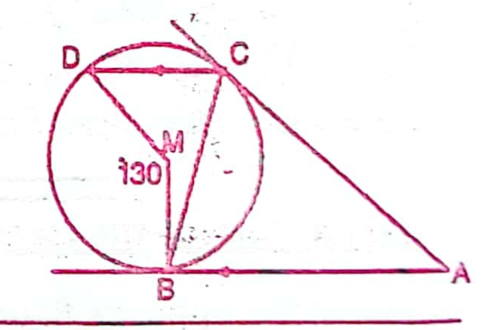
B) In the opposite figure:



AF is tangent to circle at A,
$\overline{DE}$ // $\overline{AF}$ and cut $\overline{AB}$ in X And cut $\overline{AC}$ in Y.
Prove that: XBCY is cyclic quadrilateral

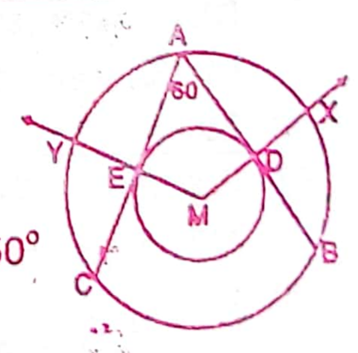
[Q4] A) ABCD is a quadrilateral drawn in a circle, F ∈ $\overline{AB}$, draw $\overrightarrow{FE}$ // $\overline{BC}$ and cut $\overline{CD}$ in E, $\overrightarrow{DF} \cap \overrightarrow{CB}$ = {X}, prove that:
① AFED is cyclic quadrilateral ② m (∠BXF) = m (∠ EAD)

B) In the opposite figure:



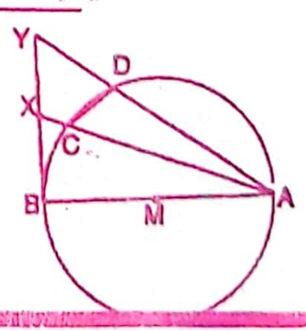
$\overline{AB}$, $\overline{AC}$ are two tangents for circle M
$\overline{AB}$ // $\overline{CD}$, m(∠BMD) = 130°
① **Prove that:** CB bisects ∠ ACD
② **Find** by prove m (∠ A)

[Q5] A) In the opposite figure:



Two concentric circles at M,
$\overline{AB}$, $\overline{AC}$ are two chords in greater circle
And touch smaller circle at D,E
Draw $\overrightarrow{MD}$, $\overrightarrow{ME}$ cut greater circle at X,Y, m (∠DAE) = 60°
① Find m(∠DME) ② Prove XD = YE

B) In the opposite figure:

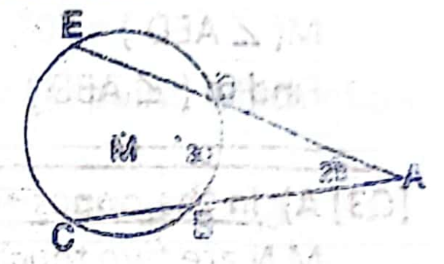


$\overline{AB}$ is diameter in circle M, $\overline{YB}$ is tangent
Prove that DCXY is cyclic quadrilateral

End of the question

Geometry – Model No (7)

[Q1] A) Choose the correct answer:



(1) In the opposite figure:

$\overrightarrow{ED} \cap \overrightarrow{CB} = \{A\}$, $m(\widehat{DB}) = 30°$

$M(\angle A) = 28°$, then $m(\widehat{EC}) = ...°$

a) 56 b) 30 c) 86 d) 28

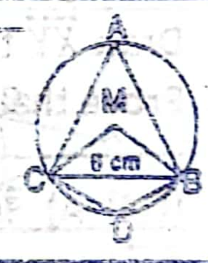
(2) If AB = 6 cm, then circumference of smallest circle passing through A, B = ... Cm

a) 3π b) 6π c) 8π d) 9π

(3) If ABCD is cyclic quadrilateral, $m(\angle A) - m(\angle C) = 60$ then $m(\angle C)$

a) 60° b) 120° c) 240° d) 360°

B): In the opposite figure:



A circle M of radius $2\sqrt{3}$, BC = 6 cm

Find $m(\angle A)$, $m(\angle BCD)$

[Q2] A) Choose the correct answer:

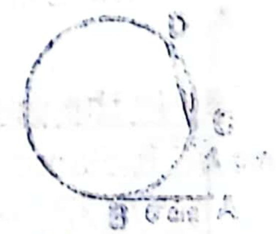
(1) M , N , L are three touching externally circles two by two, their radii 5 , 6 , 4 cm then perimeter of Δ MNL = ... cm

a) 15 b) 30 c) 40 d) 60

(2) The length of arc opposite to central angle of measure 120° in a circle of radius r is ....

a) $\frac{1}{3}\pi r$ b) πr c) $\frac{2}{3}\pi r$ d) $3\pi r$

(3) **In the opposite figure:**



$\overline{AB}$ is tangent, AB = 6 cm,

AC = 4 cm

Then CD = ... cm

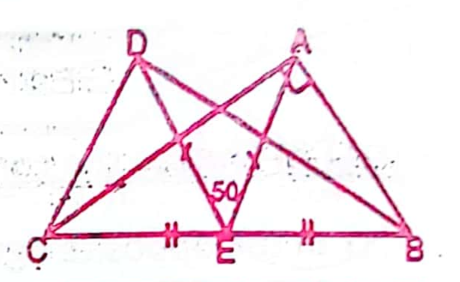
a) 5 b) 9 c) 12 d) 36

B): In the opposite figure:

EB = EC , AE = ED

M(∠ AED) = 50°, m (∠ BAC) = 90°

Find m (∠ ABD)

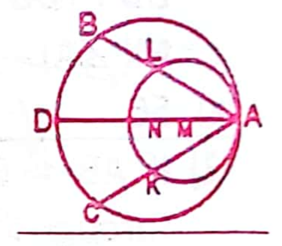


[Q3] A) In the opposite figure:

M,N are two touching internally

Circles at A, AB = AC.

Prove that: AL = AK



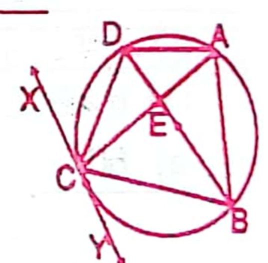
B) In the opposite figure:

ABCD is quadrilateral is drawn in circle

Its diagonals intersect at E,

Draw $\overleftrightarrow{XY}$ tangent to circle at C where $\overleftrightarrow{XY}$ // $\overline{BD}$

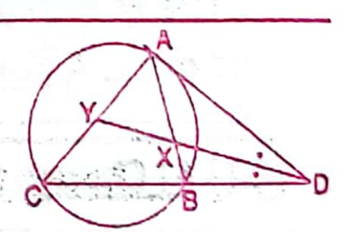
Prove that: $\overline{BC}$ is tangent to circle passing through vertices of Δ ABE



[Q4] A) In the opposite figure:

$\overrightarrow{DA}$ is tangent at A, $\overrightarrow{DY}$ bisects ∠ ADC

Prove that: Δ AXY is isosceles triangle

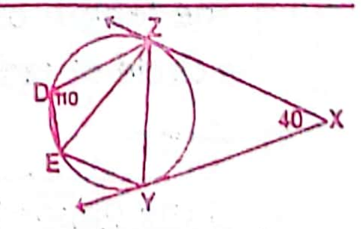


B) ABCD is quadrilateral, m(∠A) = 7 X, m(∠B) = 4X – 30°, m(∠C) = 2X, m(∠D) = 5 X + 30°, **Prove that** ABCD is cyclic quadrilateral.

[Q5] A) In the opposite figure:

$\overrightarrow{XY}$, $\overrightarrow{XZ}$ are two tangents, m(∠YXZ) =40°,

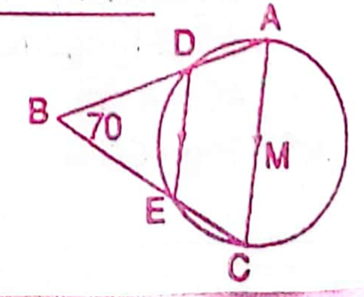
M(∠ZDE) = 110°, prove that ZE = ZY



B) In the opposite figure:

$\overline{AC}$ is diameter in circle M,

$\overline{DE}$ // $\overline{AC}$, m(∠B) =70°, Find m ($\widehat{DA}$)



End of the question

GEOMETRY – MODEL NO (8)

[Q1] A) Choose the correct answer:

(1) A circle of radius 3 cm and its center is origin point, which of the following points lies on the circle?

a) $(\sqrt{5}, 0)$ b) $(2, \sqrt{5})$ c) $(1, \sqrt{3})$ d) $(1, 3)$

(2) Number of circles which passing through three collinear points is

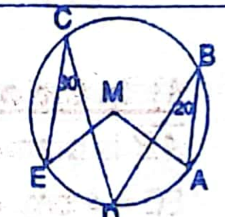
a) Zero b) 1 c) 3 d) Infinite

(3) In the opposite figure:

$M(\angle C) = 30°$, $m(\angle B) = 20°$



Then m (∠ AME) = ...°

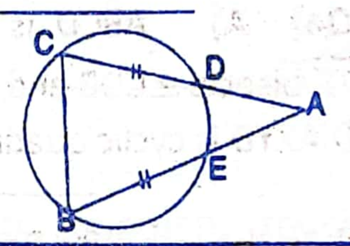


a) 20 b) 50 c) 100 d) 120

B): In the opposite figure:

$\overline{EC}$, $\overline{DB}$ are two equal chords

$\overrightarrow{DB} \cap \overrightarrow{CE} = \{A\}$. Prove that: AD = AE



[Q2] A) Choose the correct answer:

(1) A circle M of diameter (2X+5) cm, straight line L is distant from its center (X+2) cm, X >0, then L is ....circle

a) Outside the b) Tangent to c) Secant to d) Axis of the

(2) If AB is diameter in circle M, $\overleftrightarrow{AC}$, $\overleftrightarrow{BD}$ are two tangents, then AC ....BD

a) Intersect b) Parallel c) Perpendicular d) Coincide

(3) In the opposite figure:

A quarter circle of center M,

C is midpoint of $\overline{AB}$



Then m (∠ A) = ...°



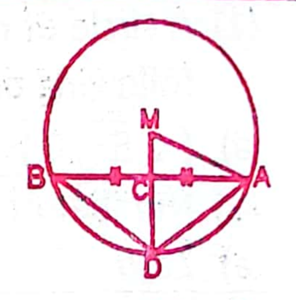
a) 20 b) 30 c) 45 d) 60



B): In the opposite figure:

AC = DB, AB = (3 X – 5) cm

DC = (x + 3) cm, find length of $\overline{AB}$



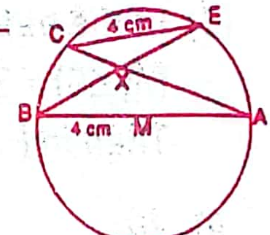
[Q3] A) In the opposite figure:

A circle M of radius 13 cm,

$\overline{AB}$ is chord of length 24 cm,

C is midpoint of $\overline{AB}$, $\overrightarrow{MC}$ ∩ circle = {D}.

Find by proof area of Δ ADB



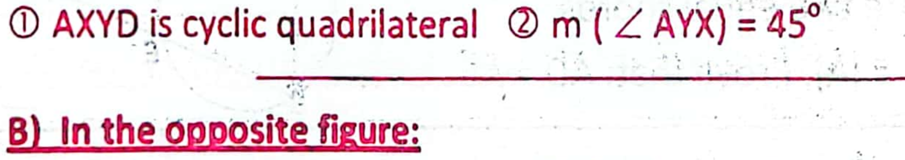
B) In the opposite figure:

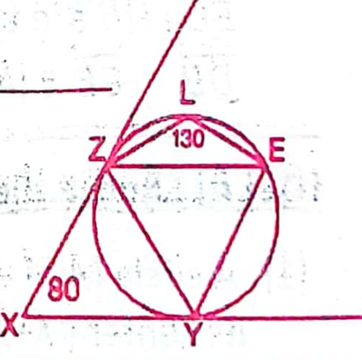
$\overline{AB}$ is diameter in circle M, its radius 4 cm,

EC = 4 cm, AC ∩ EB = {X}, Find m(∠AXE)

[Q4] A) ABCD is a square, $\overrightarrow{AX}$ bisects ∠ BAC and cut $\overline{BD}$ in X, $\overrightarrow{DY}$ bisects ∠CDB and cut $\overline{AC}$ in Y, prove that:

① AXYD is cyclic quadrilateral ② m (∠ AYX) = 45°



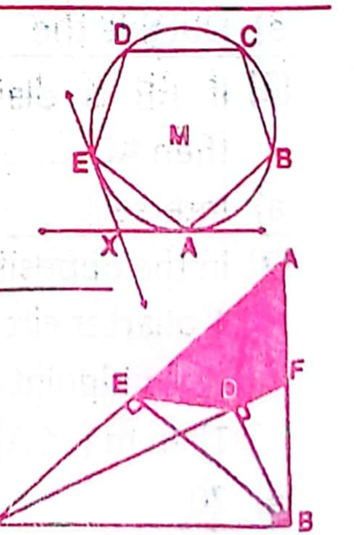


B) In the opposite figure:

$\overrightarrow{XY}$, $\overrightarrow{XZ}$ are two tangents to circle at Y, Z

M(∠YXZ) = 80°, m (∠ELZ) = 130°

Prove that: ① ZE = ZY ② $\overline{XZ}$ // $\overline{EY}$



[Q5] A) In the opposite figure:

ABCDE is regular pentagon is drawn in circle M,

$\overleftrightarrow{AX}$ is tangent at A, $\overleftrightarrow{EX}$ is tangent at E

Where $\overleftrightarrow{AX}$ ∩ $\overleftrightarrow{EX}$ = {X}, Find m ($\widehat{EA}$) , m (∠ AXE)

B) In the opposite figure:

Δ ABC is right at B, $\overline{BE}$ ⊥ $\overline{AC}$, $\overline{BD}$ ⊥ $\overline{FC}$

Prove that: AFDE is cyclic quadrilateral☐

End of the question

Geometry – Model No (9)

[Q1] A) Choose the correct answer:

(1) If ABCD is quadrilateral, m(∠A) = 3 m(∠C), then m(∠A) = ...°

a) 90 b) 45 c) 135 d) 120

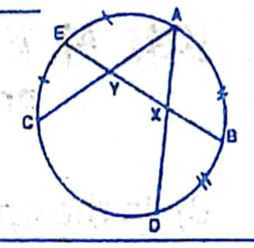
(2) If MA, MB are two perpendicular radii in circle M, area of Δ AMB = 8 cm^2, then radius of circle M = ... cm

a) 8 b) 16 c) 4 d) 2

(3) If circumference of circle is 8 π cm, point A in the plane where MA = 8 cm, then A lies .... circle M

a) Inside b) On c) Outside d) On center of

B): In the opposite figure:



E is midpoint of ($\widehat{AC}$), B is midpoint of ($\widehat{AD}$)

Prove that: Δ AXY is isosceles triangle

[Q2] A) Choose the correct answer:

(1) Number of axes of symmetry of two congruent touching externally circles is ....

a) 4 b) 2 c) 1 d) Infinite

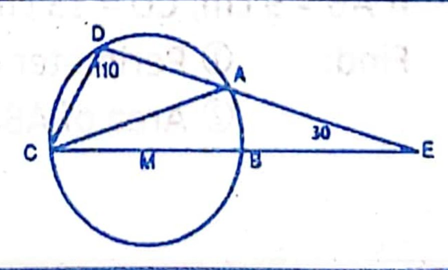
(2) The perimeter of circle passing through vertices of square whose side 6 cm equals .... cm

a) $6\sqrt{2}\,\pi$ b) 6 π c) $12\sqrt{2}\,\pi$ d) 12 π

(3) Length of arc which is opposite to central angle 90° in circle whose radius r equals .... unit length

a) 2 π r b) π r c) $\frac{1}{2}\pi r$ d) 4 π r

B): In the opposite figure:



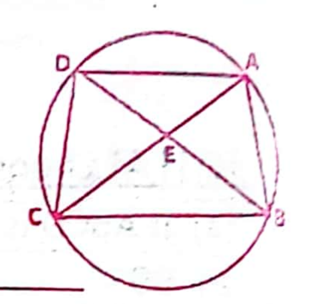
$\overline{BC}$ is diameter in circle M, m (∠ E) = 30°, m (∠ D) = 110°, Find m (∠ DAC)

[Q3]

A) In the opposite figure:

Area of Δ ABE = area of Δ DEC

Prove that: AC = DB



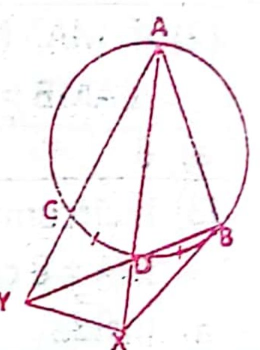
B) In the opposite figure:

D is midpoint of ($\widehat{BC}$), $\overline{BX}$ is tangent at B

Prove that:

① ABXY is cyclic quadrilateral

② $\overleftrightarrow{XY}$ is tangent to circle passing vertices of Δ ADY



[Q4] A) $\overline{BC}$ is diameter in circle M, $\overline{BY}$ is chord, E ∈ $\overline{BY}$, BY = YE, **prove that:** m (∠YMC) = 2 m (∠ BEC)

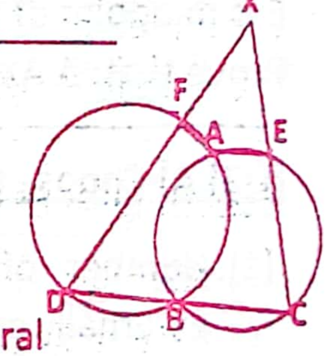
B) In the opposite figure:

Two intersecting circles at A, B

$\overline{CD}$ passing through point B

and cut two circles in C, D

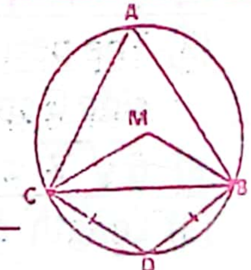
$\overrightarrow{CE} \cap \overrightarrow{DF}$ = {X}, prove that AFXE is cyclic quadrilateral



[Q5]

M (∠ BMC) – m (∠ A) = 50°

BD = CD, find m(∠A) , m (∠DBC)



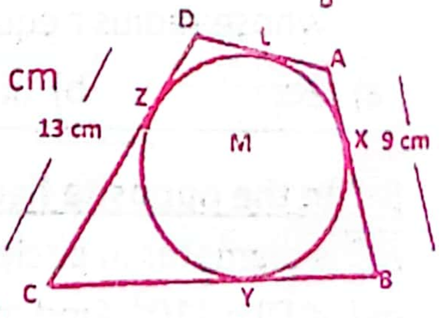
B) In the opposite figure:

M is inscribed circle of ABCD and its radius 5 cm

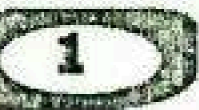
If AB = 9 cm, CD = 13 cm

Find: ① Perimeter of ABCD□

② Area of ABCD



End of the question



GEOMETRY – MODEL NO 1

[Q1] A) Choose the correct answer:

(1) The sum of interior angles of cyclic quadrilateral = ...°

a) 90 b) 180 c) 360 d) 720

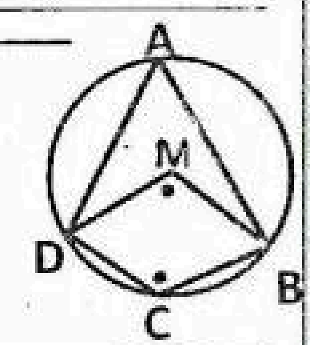
(2) The area of circle 25 π cm^2, straight line L of distant 5 cm of its center, then L is ....

a) Outside circle
c) Tangent to circle
b) Secant of circle
d) Passing through center

(3) If ABCDEF is regular hexagon drawn inside circle, m ($\widehat{AB}$)=...

a) 60° b) 90° c) 180° d) 360°

[B] In the opposite figure:

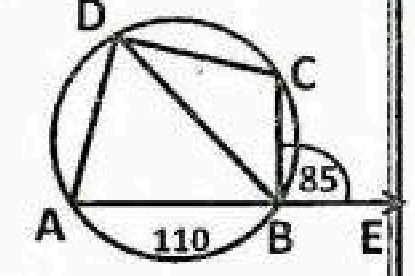


ABCD is quadrilateral drawn inside circle M

m (∠ BMD) = m (∠ BCD).

Find m (∠ A) in degrees

[Q2] Choose the correct answer:



(1) In the opposite figure:

If E ∈ $\overrightarrow{AB}$, m (∠EBC) = 85°, m($\widehat{AB}$) = 110°

Then m(∠BDC) = ...°

a) 30 b) 55 c) 85 d) 110

(2) The altitudes of obtuse triangle intersect at point lies ....

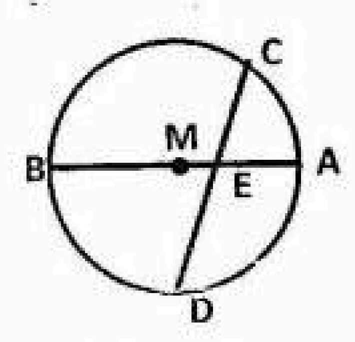
a) Inside triangle
c) On one of its vertices
b) Outside triangle
d) Midpoint of opposite side to obtuse angle

(3) Length of arc of half circle = ... Unit length

a) 2 π r b) π r c) $\frac{1}{2}$ π r d) $\frac{1}{3}$ π r

[B] ABCD is parallelogram, AC = BC, prove that $\overleftrightarrow{CD}$ is tangent to the circumcircle of Δ ABC

[Q3] [A] In the opposite figure:

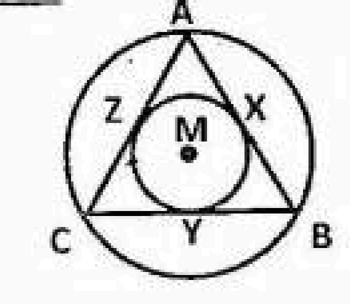


$\overline{AB}$ is diameter in circle M, $\overline{AB} \cap \overline{CD} = \{ E \}$

m ($\widehat{AD}$) = m ($\widehat{BD}$) = 3 m ($\widehat{AC}$)

Find m (∠ AEC)

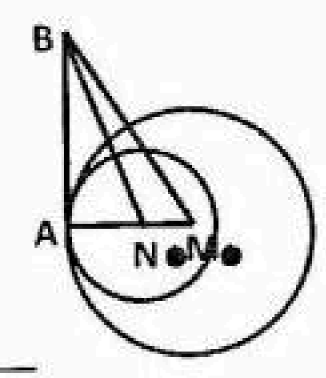
[B] **In the opposite figure**



Two concentric circles, Δ ABC is drawn in which its vertices lie on greater circle and its sides touch the smaller circle in X, Y, Z.

Prove that: Δ ABC is an equilateral triangle.

[Q4] [A] In the opposite figure:

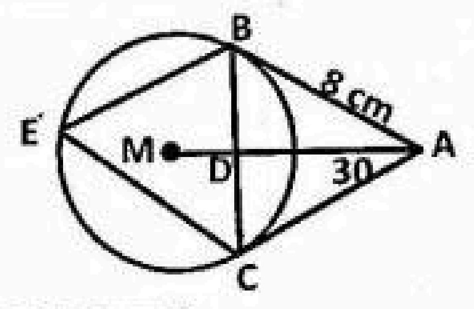


Two circles M, N, their radii 10 cm, 6 cm Respectively and touching internally at A, $\overline{AB}$ is common tangent at A, if area of Δ BMN = 24 cm^2, Find the length of $\overline{AB}$

[B] $\overline{AB}$, $\overline{CD}$ are two parallel chords in circle M, $\overline{AD} \cap \overline{CD} = \{ E \}$

Prove that: Δ EAB is an isosceles triangle.

[Q5] [A] In the opposite figure:

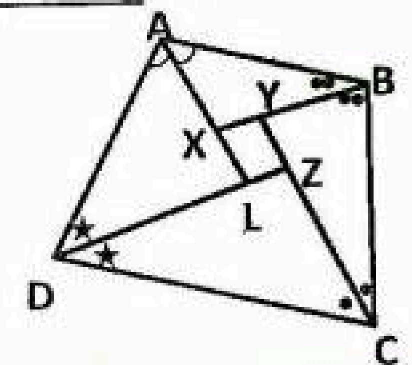


$\overline{AB}$, $\overline{AC}$ are two tangent of circle M at B , C

$\overline{AM} \cap \overline{BC}$ = {D}, AB = 8 cm, m(∠CAM) = 30°

Find: ① Perimeter of Δ ABC ② m (∠ E)

[B] In the opposite figure:



ABCD is quadrilateral, $\overrightarrow{AX}$, $\overrightarrow{BY}$, $\overrightarrow{CZ}$, $\overrightarrow{DL}$

Bisects ∠ A , ∠B , ∠ C , ∠ D respectively

Prove that: the figure XYZL is cyclic quadrilateral

End of the questions

Geometry – Model No 2

[Q1] A) Choose the correct answer:

(1) If the longest chord in a circle is 12 cm, its circumference =.......

a) 6π	b) 12π	c) 24π	d) 144π

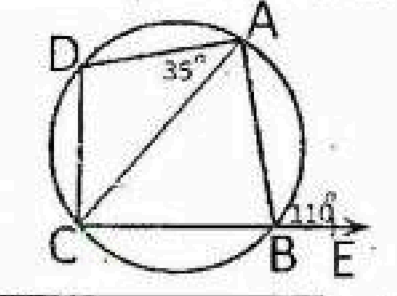
(2) The radius of two circles M , N are 6 cm , 8 cm and MN = 14 cm, then the two circles are

a) Intersecting	b) Distant	c) One inside other	d) Touching externally

(3) The inscribed angel in half circle is ....

a) Acute	b) Straight	c) Right	d) obtuse

B): In the opposite figure:



ABCD is a cyclic quadrilateral, E ∈ $\overrightarrow{CB}$

m(∠ABE) = 110° , m (∠CAD) = 35°

Prove that: m ($\overset{\frown}{CD}$) = m ($\overset{\frown}{AD}$)

[Q2] A) Choose the correct answer:

(1) A chord of length 8 cm drawn in a circle of diameter 10 cm, then the distance between the chord and the center of circle = ... cm

a) 2	b) 3	c) 4	d) 6

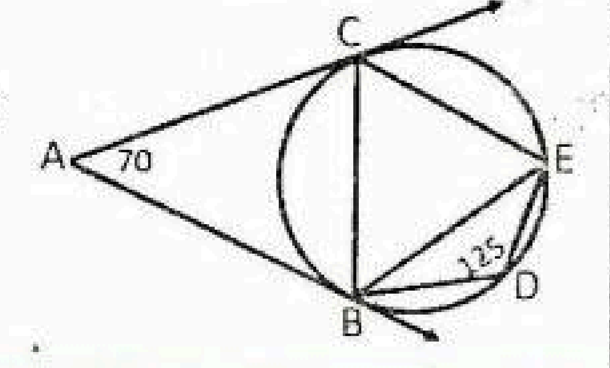
(2) Number of common tangents for two touching internally circles is

a) Zero	b) 1	c) 2	d) 3

(3) ABCD is cyclic quadrilateral, m(∠A) = 2 m (∠C), then m(∠A) = ...

a) 30°	b) 60°	c) 90°	d) 120°

B): In the opposite figure:



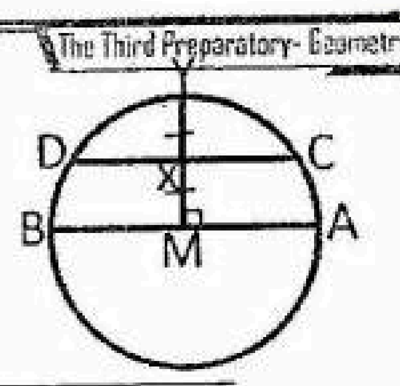
$\overrightarrow{AB}$, $\overrightarrow{AC}$ are two tangents of the circle

M(∠A) = 70 ° , m (∠D) = 125°

① Find m (∠ABC)

② Prove that: BC = EB

[Q3] A) In the opposite figure:

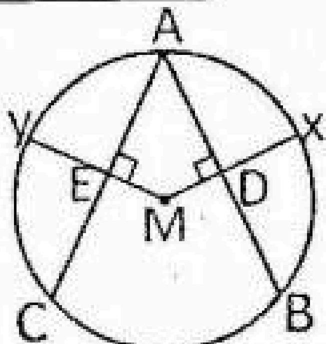


$\overline{AB}$ is diameter in the circle M

$\overline{CD} \parallel \overline{AB}$, X is midpoint of $\overline{MY}$

$\overline{MY} \perp \overline{AB}$. Find m($\widehat{AC}$) , m ($\widehat{YC}$)

B) In the opposite figure:



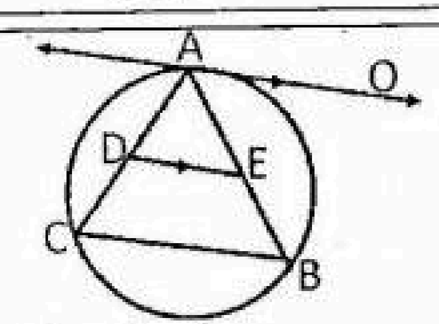
$\overline{AB}$, $\overline{AC}$ are two equal chords in circle M

$\overrightarrow{MD} \perp \overline{AB}$, and cut the circle in X

$\overrightarrow{ME} \perp \overline{AC}$, and cut the circle in Y

Prove that: XD = YE

[Q4] A) In the opposite figure:

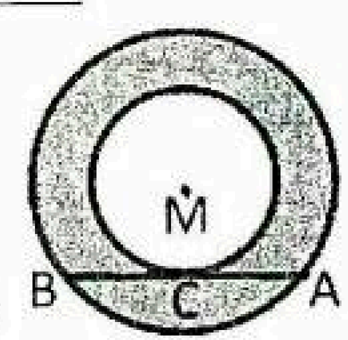


$\overleftrightarrow{AO}$ is a tangent to the circle M at A

$\overleftrightarrow{AO} \parallel \overline{ED}$. Prove that:

DEBC is cyclic quadrilateral

B) In the opposite figure:



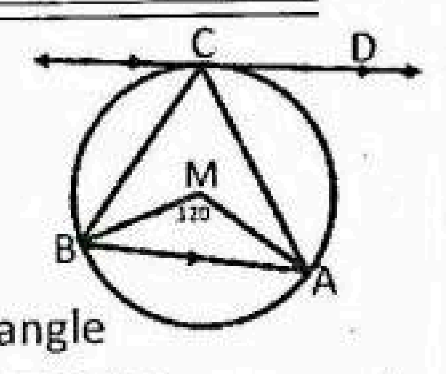
Two concentric circles at M

$\overline{AB}$ is chord in the greatest circle

And touch the smallest circle at C

If AB = 14 cm. Find the area between two circles

[Q5] A) In the opposite figure:



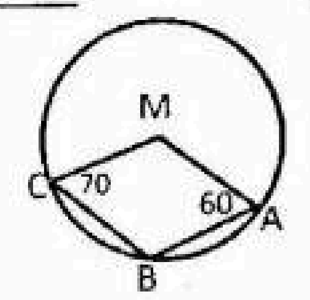
The circle M passes through vertices

Of Δ ABC, m($\angle$AMB) = 120°,

$\overleftrightarrow{CD}$ is tangent to the circle M at C

$\overleftrightarrow{CD} \parallel \overline{AB}$. Prove that: Δ ABC is equilateral triangle

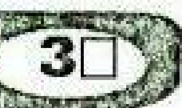
B) In the opposite figure:



m ($\angle$ MAB) = 60°, m ($\angle$ MCD) = 70°

Find by prove m ($\angle$ AMC)

GEOMETRY – MODEL NO 3



[Q1]: A) Choose the correct answer:

(1) The two tangents which are drawn from the two endpoints of a diameter of a circle are ....

a) Parallel b) Intersecting c) Equals d) Perpendicular

(2) A chord of length 8 cm, in a circle of radius 5 cm, then the distance between chord and the center of circle is .... Cm

a) 1 b) 2 c) 3 d) 4

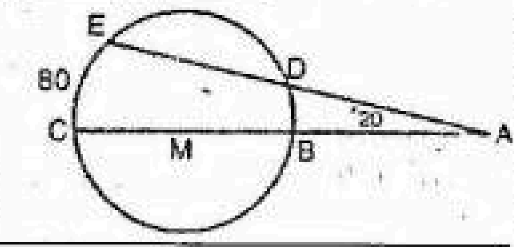
(3) The measure of the central angle which is opposite to an arc of length $\frac{1}{3}\pi r$ equals .... °

a) 30 b) 60 c) 120 d) 240

B): In the opposite figure:

$\overline{BC}$ is a diameter of circle M,

m(∠A) = 20°, m($\widehat{CE}$) = 80°, find m ($\widehat{DE}$)



[Q2]: A) Choose the correct answer:

(1) Number of symmetric axes of two touching circles externally is...

a) 0 b) 1 c) 2 d) ∞

(2) If point A lies on surface of circle M and length of its diameter is 6 cm, then m ∈ ....

a)]−∞ , 6] b)]−∞ , 3] c) [0 , 3] d)] 3 , ∞ [

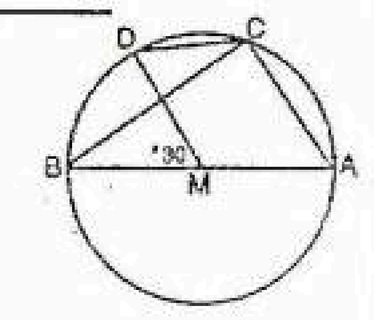
(3) ABCD is a quadrilateral inscribed in a circle, m(∠A) = 70°, then m(BAD) = ... °

a) 35 b) 55 c) 140 d) 220

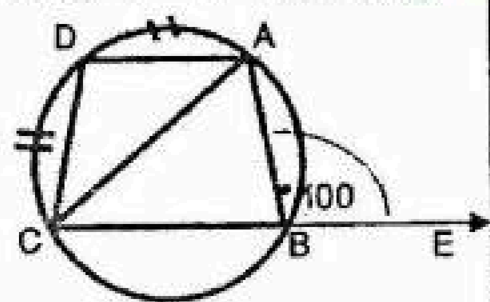
B): In the opposite figure:

$\overline{AB}$ is diameter in circle M, m (∠BMD) = 30°

Find: ① m (∠BCD) ② m (∠ACD)

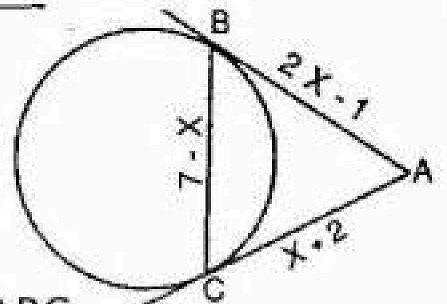


[Q3] A): In the opposite figure:



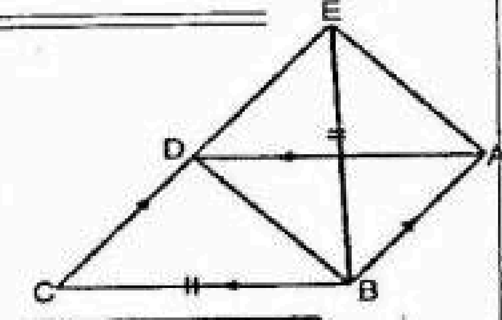
ABCD is a quadrilateral inscribed in a circle,
$E \in \overrightarrow{CB}$, m (∠ABE) = 100°,
D is midpoint of $\widehat{AC}$, Find m (∠ DAC)

B): In the opposite figure:



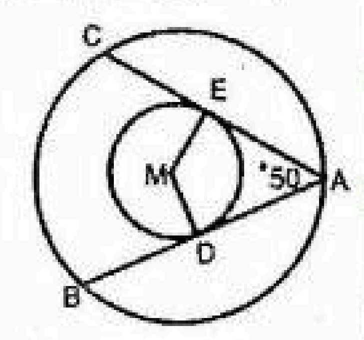
$\overline{AB}$, $\overline{AC}$ are two tangent segments
To the circle at B and C, AB = 2 X – 1
AC = X + 2, BC = 7 – X, **find**:
① The value of X ② The perimeter of Δ ABC

[Q4] A): In the opposite figure:



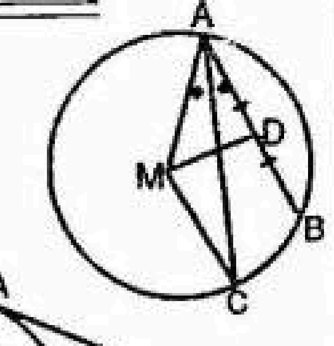
ABCD is a parallelogram, $E \in \overrightarrow{CD}$, BE = BC
Prove that: ① ABDE is cyclic quadrilateral
② m (∠ AEB) = m (∠ DBC)

B): In the opposite figure:



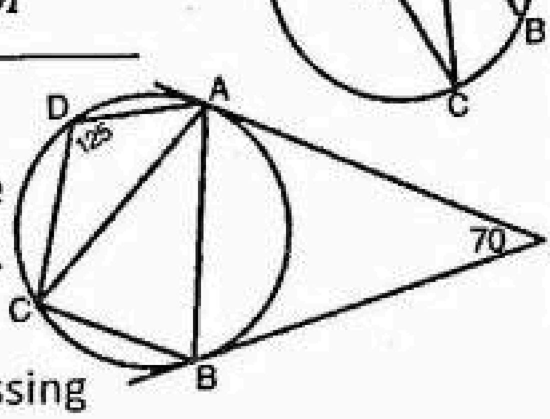
Two concentric circles at M, $\overline{AB}$ and $\overline{AC}$ are two chords in the greater circle and two tangent to smaller circle at D , E respectively, m (∠A) = 50°
① **Find** m (∠ EMD) ② **Prove that**: AB = AC

[Q5] A): In the opposite figure:



$\overline{AB}$ is chord in circle M, D midpoint of $\overline{AB}$
$\overrightarrow{AC}$ bisects ∠ BAM, prove that $\overline{DM} \perp \overline{CM}$

B): In the opposite figure:



$\overrightarrow{EA}$, $\overrightarrow{EB}$ are two tangents to the circle at A and B, m(∠E) = 70°, m (∠D) = 125°.
Prove that: ① AB = AC
② $\overrightarrow{AC}$ is tangent to the circle which passing through vertices of Δ ABE

Geometry – Model No 4

[Q1] A) Choose the correct answer:

(1) A circle of radius 4 cm and its center is origin point, which of the following points not belong to the circle?

a) (0 , 4) b) (4 , 0) c) (0 , −4) d) (4 , 4)

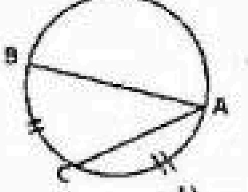
(2) If straight line L lies outside circle of diameter 10 cm, and the distance between L and center of circle is X, then X ∈ ....

a) [0 , 5] b)] 0 , 5 [c) [0 , 5 [d)] 5 , ∞ [

(3) In the opposite figure:

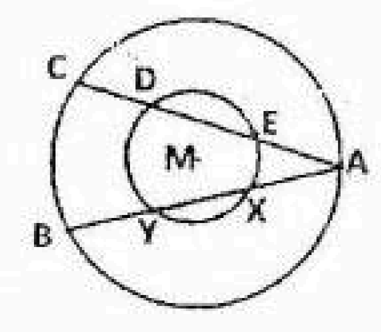
C is midpoint of $\widehat{AB}$,

Then AB .... 2 AC



a) > b) < c) ≥ d) =

B): In the opposite figure: Two concentric circles at M, $\overline{AB}$ is chord in greater circle and cut smaller circle at X , Y, $\overline{AC}$ is chord in greater circle cut smaller circle in D , E , if AB = AC, **Prove that:** DE = XY



[Q2] A) Choose the correct answer:

(1) In the opposite figure:

M(∠A) = 55°, m (∠(MCB) = ...°

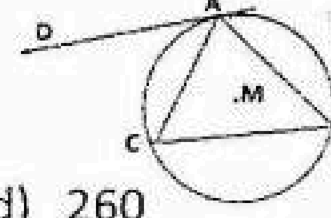


a) 180 b) 90 c) 100 d) 110

(2) In the opposite figure:

$\overrightarrow{AD}$ is tangent to circle M at A,

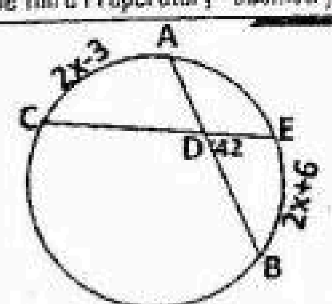
m(∠DAB) = 130°, Then m(∠C) = ...°



a) 50 b) 65 c) 130 d) 260

(3) We can't draw circle passing through vertices of ....

a) Parallelogram b) Square c) Rectangle d) Isosceles trapezium

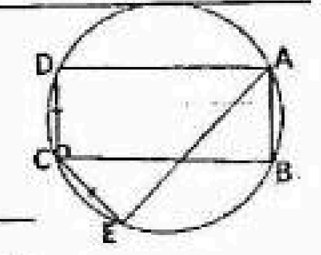


B): **In the opposite figure:**

$\overline{AB} \cap \overline{EC} = \{D\}$, m(∠EDB) = 42°

M($\widehat{EB}$) = (2 X + 6)° , m ($\widehat{AC}$) = (3 X − 2)°

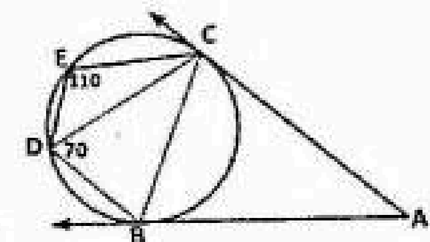
Find the value of C?



[Q3] A) **In the opposite figure:**

ABCD is a rectangle drawn in a circle

CD = CE, prove that: AE = BC



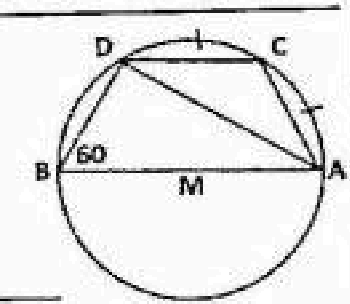
B) **In the opposite figure:**

$\overrightarrow{AB}$, $\overrightarrow{AC}$ are two tangents at B, C

M(∠E) = 110°, m(∠BDC) =70°

Prove that: ① $\overrightarrow{BC}$ bisects ∠ ABD

② $\overrightarrow{CD}$ is tangent to circle passes through vertices of Δ ABC

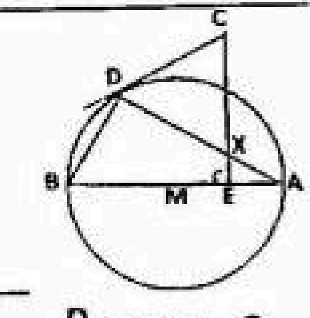


[Q4] A) **In the opposite figure:**

ABCD is cyclic quadrilateral, $\overline{AB}$ is diameter in circle M, m(∠B) = 60°, Length of $\widehat{AC}$ = length of $\widehat{CD}$

Prove that: $\overrightarrow{AD}$ bisects ∠ BAC

B) XYZL is a Parallelogram, ∠ X is acute angle, F ∈ $\overrightarrow{ZL}$, F ∉ $\overline{ZL}$ where YF = XL. **Prove that** XYLF is cyclic quadrilateral.

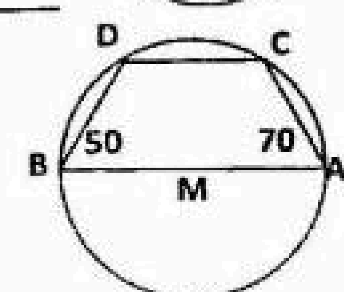


[Q5] A) In the opposite figure:

$\overline{AB}$ is diameter in circle M,

$\overline{CD}$ is tangent to circle D

If $\overline{CE} \perp \overline{AB}$, prove that: CX = CD



B) In the opposite figure:

AB is diameter in circle M, its radius is 5 cm,

m(∠B) = 50°, m(∠A) = 70°, find the length of $\overline{CD}$

End of the question

GEOMETRY – MODEL No



[Q1] A) Choose the correct answer:

(1) If ABCD is square drawn in a circle, then m ($\widehat{AB}$) = ...°

a) 60 b) 90 c) 120 d) 180

(2) Number of common tangent for two touching internally circles is

a) 1 b) 2 c) 3 d) Zero

(3) Center of all circles passes through two points A , B lies on ....

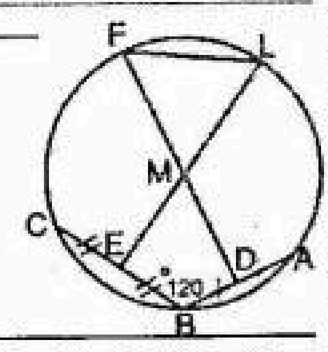
a) $\overline{AB}$

b) Axis of $\overline{AB}$

c) Midpoint of $\overline{AB}$

d) Perpendicular on axis of $\overline{AB}$

B): In the opposite figure:



$\overline{AB}$, $\overline{AC}$ are two chords in circle M of radius 7 cm , D, E midpoints of $\overline{AB}$, $\overline{AC}$, m(∠BAC) = 120°, Draw $\overrightarrow{DM}$, $\overrightarrow{EM}$ cut circle in F, L find length of $\overline{LF}$

[Q2] A) Choose the correct answer:

(1) Circle of area $X\pi$ cm^2, straight line L of distant (X + 1) cm form its center, then L lies .... Circle

a) Outside the b) Secant of c) Tangent of d) Axis of

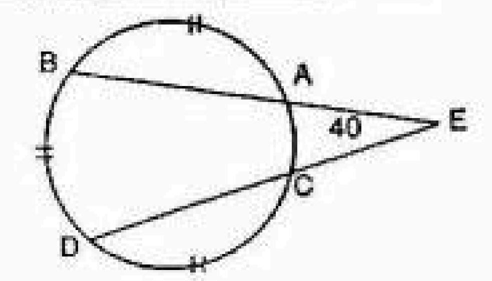
(2) In the opposite figure:
$\overline{MA} \perp \overline{MB}$,
Then m(∠ACB) = ... °

a) 90 b) 135 c) 110 d) 270

(3) The center of circumcircle of a triangle is intersection point of ....

a) Medians b) Altitudes c) Axes of its sides d) Bisectors of its angles

B): In the opposite figure:



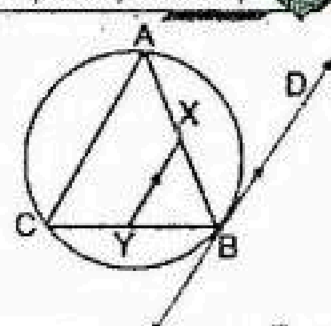
M ($\widehat{AB}$) = m ($\widehat{DB}$) = m ($\widehat{DC}$)
M (∠ C) = 40°, find m ($\widehat{AC}$)

[Q3] A) In the opposite figure:

ABC is triangle drawn in a circle,

$\overrightarrow{BD}$ is tangent, $\overline{BD}$ // $\overline{XY}$

Prove that: AXYC is cyclic quadrilateral.

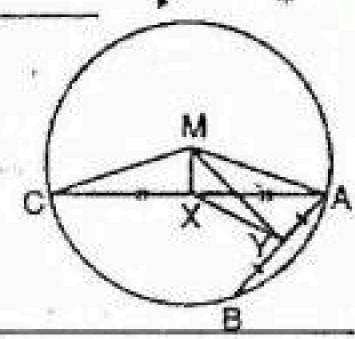


B) In the opposite figure:

X is midpoint of $\overline{AC}$, Y is midpoint of $\overline{AB}$

① Prove that: m (∠ MYX) = m (∠ MCX)

② $\overline{AM}$ is diameter in circle passes A , Y , X , M

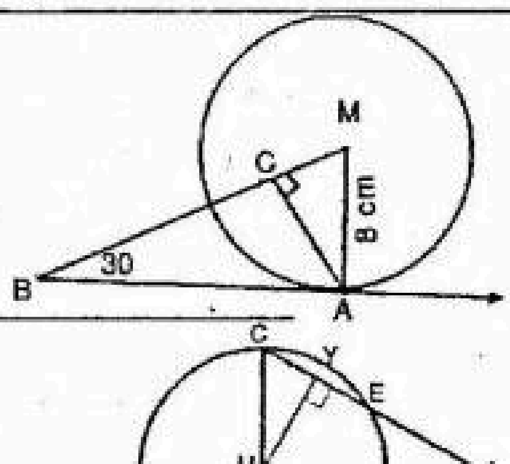


[Q4] A) In the opposite figure:

$\overrightarrow{BA}$ is tangent of circle M at A, $\overline{AC} \perp \overline{MB}$,

MA = 8 cm, m (∠B) = 30°

Find the length of $\overline{AB}$, $\overline{AC}$

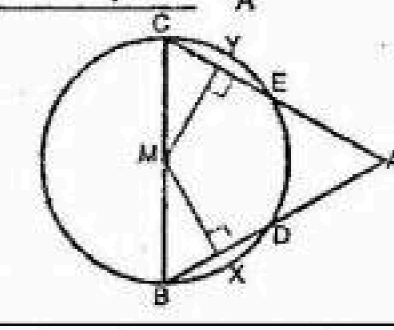


B) In the opposite figure:

$\overline{BC}$ is diameter in circle M, $\overline{BD} \cap \overline{CE}$ = {A}

$\overline{MX} \perp \overline{AB}$, $\overline{MY} \perp \overline{AC}$, if AB = AC,

Prove that AD = AE

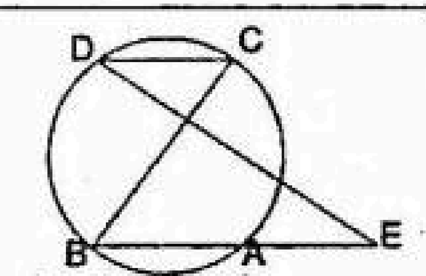


[Q5]

A) In the opposite figure:

E is a point outside the circle

Prove that: m(E) < m (BCD)



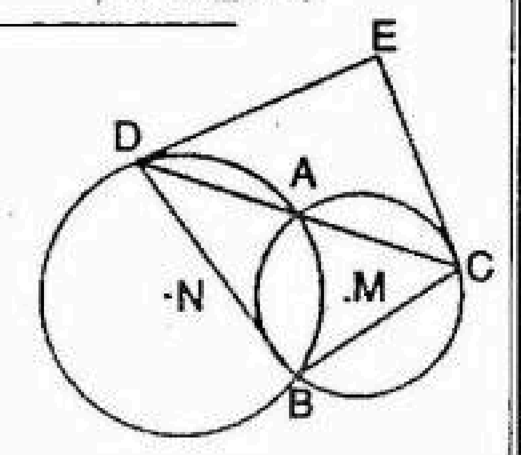
B) In the opposite figure:

M , N are two circles intersecting at A, B

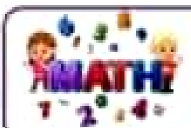
$\overleftrightarrow{EC}$ is tangent of circle M at C,

$\overleftrightarrow{DC}$ is tangent of circle N at D

Prove that ECBD is cyclic quadrilateral



End of the question



Prep. 3 _ Model (11)



[Q1] A) Choose the correct answer:

(1) M , N are two intersecting circles with radius 6 cm , 4 cm, then m n ∈ ....

a)] 10 , ∞ [b)] 2 , 10 [c)] 0 , 2 [d)] 4 , 6 [

(2) A circle of radius 5 cm , $\overline{AB}$ is chord with length 8 cm, then the distance between $\overline{AB}$ and the center of circle is ....

a) 3 cm b) 6 cm c) 8 cm d) 10 cm

(3) In the opposite figure:

ED ∩ CB = {A} , m ($\widehat{DB}$)= 30°

m(∠A) = 28°, then m ($\widehat{EC}$) = ...

a) 56° b) 30 ° c) 86 ° d) 28 °

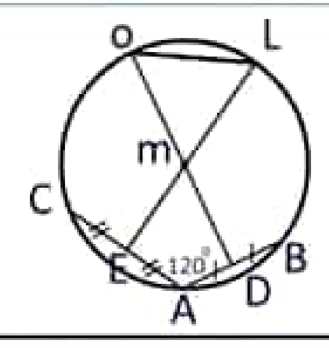


B): In the opposite figure:

$\overline{AB}$, $\overline{AC}$ are two chords in circle M and D , E are midpoints of $\overline{AB}$, $\overline{AC}$, m (∠BAC) = 120°

draw $\overrightarrow{DM}$, $\overrightarrow{EM}$ cut the circle in O , L

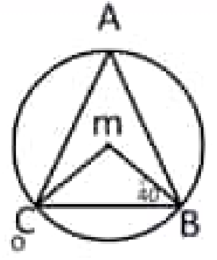
Prove that: L O = length of the radius of M



[Q2] A) Choose the correct answer:

(1) In the opposite figure:

m (∠ A) = ...

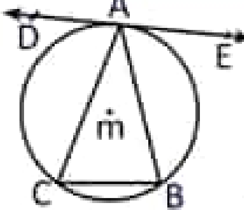


a) 20 ° b) 40 ° c) 50 ° d) 80°

(2) In the opposite figure:

$\overleftrightarrow{ED}$ is tangent, m(∠DAB) = 110°

Then m (∠ ACB) = ...°



a) 35 b) 55 c) 60 d) 70

(3) If ABCD is cyclic quadrilateral, m (∠A) = 3 m (∠ C), then m(∠A) =...

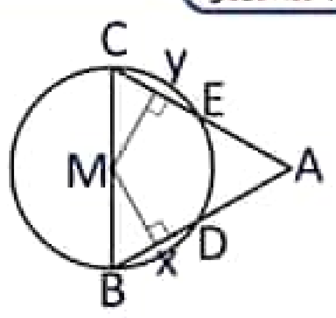
a) 45 b) 90 c) 135 d) 180

B): In the opposite figure:

$\overline{BC}$ is diameter of circle M, $\overrightarrow{BD} \cap \overrightarrow{CE} = \{A\}$

$\overline{MX} \perp \overline{AB}$, $\overline{MY} \perp \overline{AC}$, if AB = AC

Prove that AD = AE

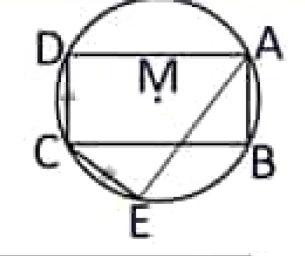


[Q3] A) In the opposite figure:

ABCD is a rectangle drawn in a circle M

E ∈ circle M where DC = CE

Prove that: AE = BC



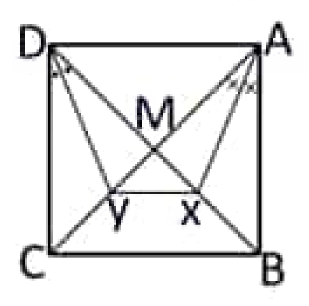
B) In the opposite figure:

ABCD is square, $\overrightarrow{AX}$ bisects ∠ BAC

$\overrightarrow{AY}$ bisects ∠ BDC. Prove that:

① AXYD is cyclic quadrilateral

② Find m (∠ AYX)

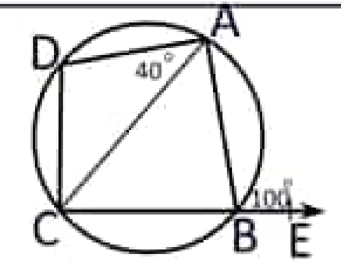


[Q4] A) In the opposite figure:

ABCD is a cyclic quadrilateral, E ∈ $\overrightarrow{CB}$

m(∠ABE) = 100° , m (∠CAD) = 40°

Prove that: m ($\overset{\frown}{CD}$) = m ($\overset{\frown}{AD}$)



B) $\overline{BC}$ is a diameter in a circle M, $\overline{BY}$ is chord, E ∈ $\overrightarrow{BY}$ where BE = EY.

Prove that: m (∠ YMC) = 2 m (BEC)

[Q5] In the opposite figure

$\overline{AB}$, $\overline{AC}$ are two tangents to circle M at B , C

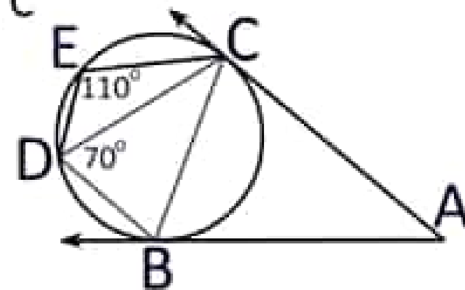
m(∠E) = 110° , m (∠ BDC)= 70°

Prove that:

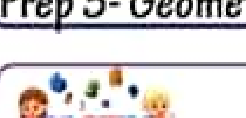
① $\overrightarrow{BC}$ bisects ∠ ABD

② $\overrightarrow{CD}$ is tangent to the circle

Which passes through the vertices of Δ ABC.



••• End of the questions •••



Prep. 3 _ Model (12)



[Q1] A) Choose the correct answer:

(1) The line of centers of two intersecting circles is perpendicular on common .... and bisect it

a) Diameter b) Tangent c) Chord d) Arc

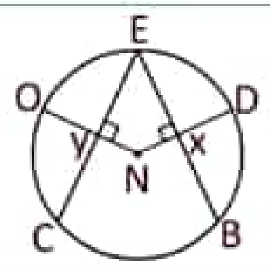
(2) The measure of inscribed angle drawn in quarter circle = ...°

a) 135 b) 120 c) 90 d) 45

(3) The center of the inscribed circle of triangle is the intersection point of ....

a) Medians b) Axis of sides c) Altitudes d) Bisectors angles

B): In the opposite figure:



$\overline{AB}$, $\overline{AC}$ are two equal chords in circle N

$\overrightarrow{NX} \perp \overline{AB}$, $\overrightarrow{NY} \perp \overline{AC}$ and $\overrightarrow{NX}$, $\overrightarrow{NY}$ intersect Circle N at D , O. Prove that D X = O Y

[Q2] A) Choose the correct answer:

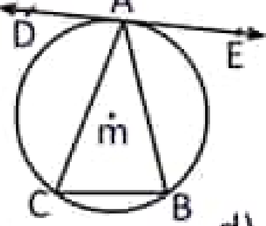
(1) If the circumference of circle is 8 π cm and straight line L is on distance 3 cm from its center, then L is .... Circle

a) Outside the b) Secant to c) Tangent to d) **Passes through**

(2) If ABCD is cyclic quadrilateral, m (∠A) = 3 m (∠ C), then m(∠A) =...

a) 180 b) 135 c) 90 d) 45

(3) In the opposite figure:

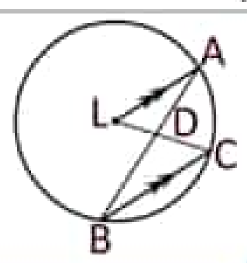


$\overleftrightarrow{ED}$ is tangent, m(∠DAB) = 110°

Then m (∠ ACB) = ...°

a) 35 b) 55 c) 60 d) 70

B): In the opposite figure:



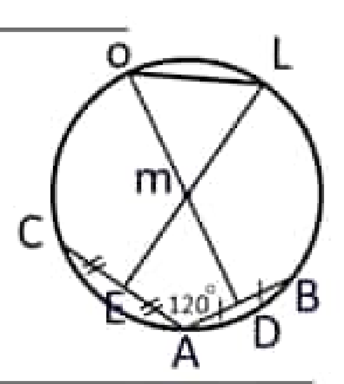
$\overline{BC}$ is diameter of circle L , $\overline{LA}$ // $\overline{CE}$


$\overline{AB} \cap \overline{LC}$ = {D}, Prove that BD > CD

[Q3] A) In the opposite figure:

ABCD is quadrilateral drawn in a circle, O ∈ $\overline{AB}$, if we draw $\overline{OE}$ // $\overline{BC}$ and cut $\overline{CD}$ in E. Prove that AOED is a cyclic quadrilateral

B) In the opposite figure:



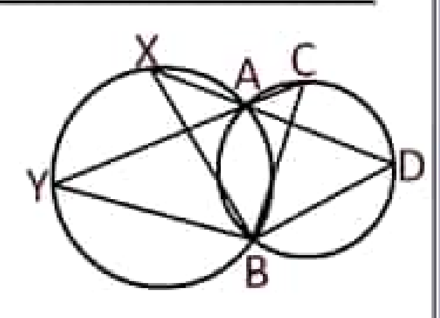
$\overline{AB}$, $\overline{BC}$ are two chords in circle M

And were bisected at D, E and m (∠BAC) = 120°

IF $\overrightarrow{DM}$, $\overrightarrow{EM}$ were drawn and cut the circle At O , L

Prove that: Δ MLO is equilateral triangle

[Q4] A) In the opposite figure:



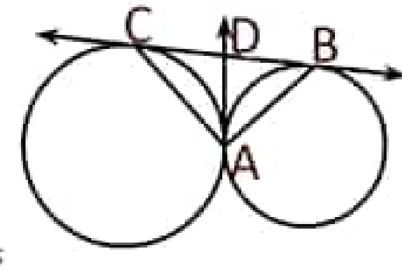
Two circles are intersecting at A , B

$\overleftrightarrow{AC}$ cut small circle at C and the greatest circle at Y

$\overleftrightarrow{AD}$ cut small circle at D and the greatest circle at X

Prove that: m (∠ CBD) = m (∠ XBY)

B) In the opposite figure:



Two circles are touching externally at A

$\overleftrightarrow{BC}$ is a tangent to them at B , C

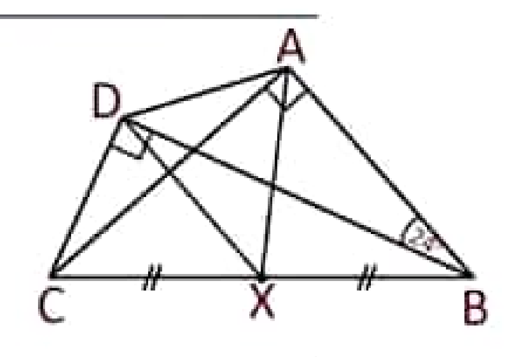
$\overrightarrow{AD}$ is a common tangent at A and cut $\overleftrightarrow{BC}$ in D

Prove that: ① D is midpoint of $\overline{BC}$ ② $\overline{AB} \perp \overline{AC}$

[Q5] A)

$\overline{AB}$ is a diameter in a circle in which its area is 36 π cm^2, draw $\overleftrightarrow{BC}$ tangent to the circle at B, if m (∠ ACB) = 60°, calculate the area of the Δ ABC

B) In the opposite figure:



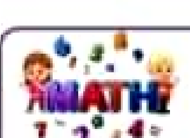
ABCD is a quadrilateral, $\overline{AC} \perp \overline{AB}$, $\overline{BD} \perp \overline{CD}$

Prove that: ABCD is a cyclic quadrilateral

If X is midpoint of BC, m (∠ ABD) = 24°

Find m (∠ AXD)

••• End of the questions •••



Prep. 3 _ Model (13)



[Q1] A) Choose the correct answer:

(1) If the circumference of circle is 8 π cm and straight line L is on distance 3 cm from its center, then L is .... Circle

a) Outside the b) Secant to c) Tangent to d) Passes through

(2) The measure of central angles in a circle .... measure of inscribed angle subtended by the same arc

a) Supplements b) Equal c) Half d) Double

(3) The center of inscribed circle of triangle is intersection point of ......

a) Medians b) Axis of sides c) Altitudes d) Bisectors angles

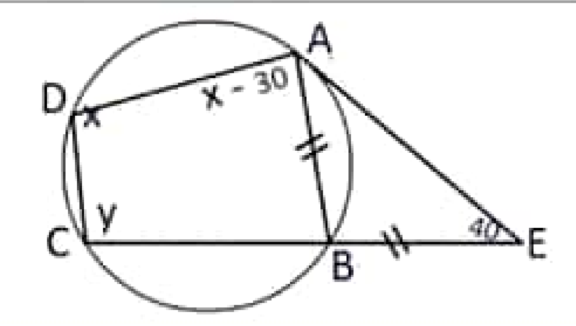
B): In the opposite figure:

$\overline{EA}$ is a tangent to circle M at A

m (∠BAD) = X – 30 °, m(∠E) = 40°

m (∠ D) = X , m (∠C) = Y , BA = BE

Find the value of X , Y



[Q2] A) Choose the correct answer:

(1) The length of the arc which represents half circle is ....

a) π r b) 2 π r c) $\frac{1}{2}$ π r d) $\frac{1}{4}$ π r

(2) The number of common tangents for two distant circles is ....

a) 1 b) 2 c) 3 d) 4

(3) If AB = 6 cm , then the number of circle which passes through A, B and the length of its radius 3 cm is ....

a) 1 b) 2 c) Zero d) Infinite

B): In the opposite figure:

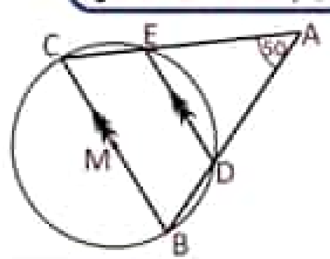
$\overline{AB}$, $\overline{AC}$ are two equal chords in circle N

X is midpoint of AB, MX cut circle M in D

$\overrightarrow{MY} \perp \overline{AC}$, and cut the circle in E

Prove that: ① XD = YE ② m(∠YXB) = m(∠XYC)

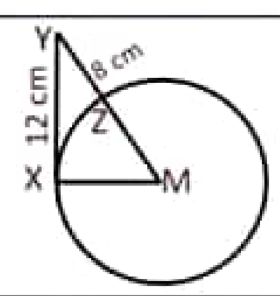




[Q3] A) In the opposite figure:

$\overline{BC}$ is a diameter in circle M, $\overline{DE} \parallel \overline{BC}$

$\overrightarrow{BD} \cap \overrightarrow{CE} = \{A\}$, m ($\angle$A) = 50°. Find m ($\overset{\frown}{BD}$)

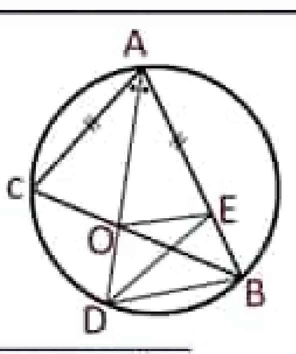


B) In the opposite figure:

$\overline{XY}$ is a tangent to circle M,

XY = 12 cm, ZY = 8 cm

Find the length of the $\overline{XM}$.



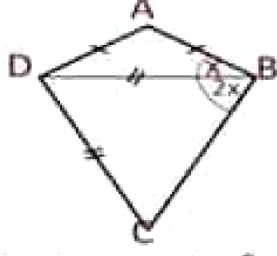
[Q4] A) In the opposite figure:

Δ ABC is inscribed triangle in a circle,

E $\in \overrightarrow{AB}$ where AC = AE, $\overrightarrow{AD}$ bisects $\angle$BAC and

Cut the circle in D and cut $\overline{BC}$ in O

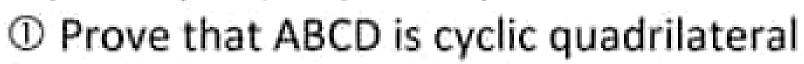
Prove that: m ($\angle$ DBO)= m ($\angle$ DEO)



B) In the opposite figure:

ABCD is a quadrilateral, AB = AD, D B = D C

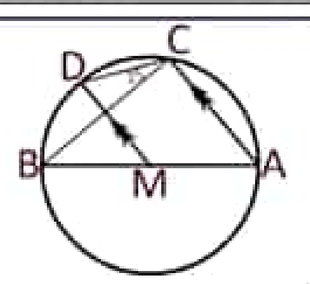
m($\angle$ABD) = X, m ($\angle$CBD) = 2 X



① Prove that ABCD is cyclic quadrilateral



② Determine the center of circle passes through ABCD at X = 30°

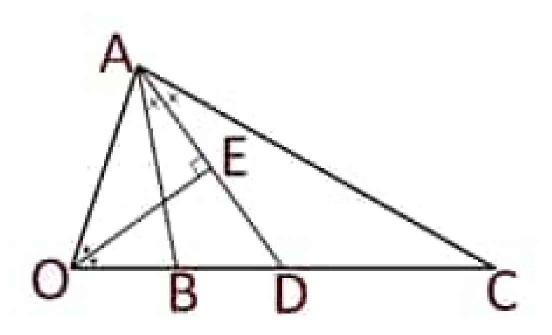


[Q5] A) In the opposite figure:

$\overline{AB}$ is a diameter in circle M,

$\overline{MC} \parallel \overline{AC}$, m (BCD) = 25°.

Find m ($\angle$ BAC)



B) In the opposite figure:

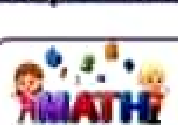
$\overrightarrow{AD}$ bisects $\angle$ BAC, $\overrightarrow{OE}$ bisects $\angle$ O

$\overrightarrow{OE} \perp \overrightarrow{AD}$ Prove that:

$\overleftrightarrow{AO}$ is tangent to the circle

which passes through points A , B , c

••• End of the questions •••



Prep. 3 _ Model (14)



[Q1] A) Choose the correct answer:

(1) If the longest chord in a circle is 12 cm, its circumference =.......

a) 6π b) 12π c) 24π d) 144π

(2) The radius of two circles M , N are 6 cm , 8 cm and MN = 14 cm, then the two circles are

a) Intersecting b) Distant c) One inside other d) Touching externally

(3) The inscribed angel in half circle is ....

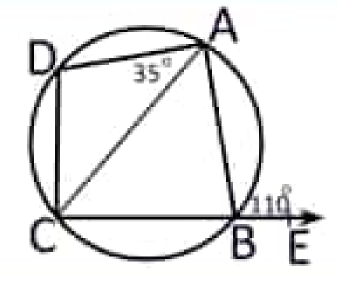
a) Acute b) Straight c) Right d) obtuse

B): In the opposite figure:

ABCD is a cyclic quadrilateral, $E \in \overrightarrow{CB}$

$m(\angle ABE) = 110^\circ$, $m(\angle CAD) = 35^\circ$

Prove that: $m(\widehat{CD}) = m(\widehat{AD})$



[Q2] A) Choose the correct answer:

(1) A chord of length 8 cm drawn in a circle of diameter 10 cm, then the distance between the chord and the center of circle = ... cm

a) 2 b) 3 c) 4 d) 6

(2) Number of common tangents for two touching internally circles is

a) Zero b) 1 c) 2 d) 3

(3) ABCD is cyclic quadrilateral, $m(\angle A) = 2\, m(\angle C)$, then $m(\angle A) = ...$

a) 30° b) 60° c) 90° d) 120°

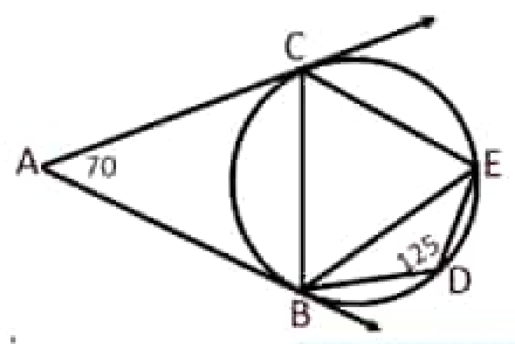
B): In the opposite figure:

$\overrightarrow{AB}$, $\overrightarrow{AC}$ are two tangents of the circle

$M(\angle A) = 70^\circ$, $m(\angle D) = 125^\circ$

① Find $m(\angle ABC)$

② Prove that: BC = EB

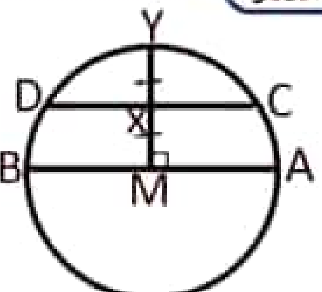


[Q3] A) In the opposite figure:

$\overline{AB}$ is diameter in the circle M

$\overline{CD} \parallel \overline{AB}$, X is midpoint of $\overline{MY}$

$\overline{MY} \perp \overline{AB}$. Find m($\widehat{AC}$) , m ($\widehat{YC}$)



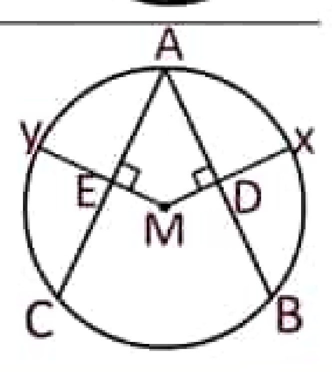
B) In the opposite figure:

$\overline{AB}$, $\overline{AC}$ are two equal chords in circle M

$\overrightarrow{MD} \perp \overline{AB}$, and cut the circle in X

$\overrightarrow{ME} \perp \overline{AC}$, and cut the circle in Y

Prove that: XD = YE

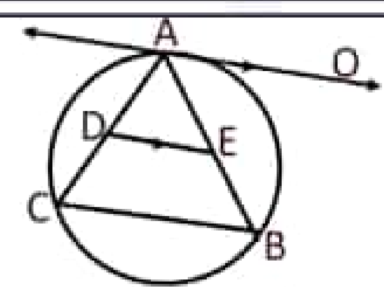


[Q4] A) In the opposite figure:

$\overleftrightarrow{AO}$ is a tangent to the circle M at A

$\overleftrightarrow{AO} \parallel \overline{ED}$. Prove that:

DEBC is cyclic quadrilateral



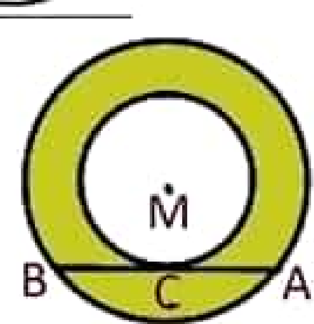
B) In the opposite figure:

Two concentric circles at M

$\overline{AB}$ is chord in the greatest circle

And touch the smallest circle at C

If AB = 14 cm. Find the area between two circles



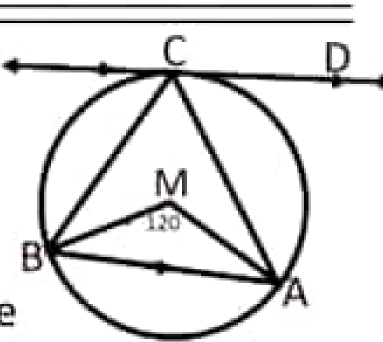
[Q5] A) In the opposite figure:

The circle M passes through vertices

Of Δ ABC, m(∠AMB) = 120°,

$\overleftrightarrow{CD}$ is tangent to the circle M at C

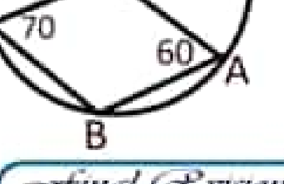
$\overleftrightarrow{CD} \parallel \overline{AB}$. Prove that: Δ ABC is equilateral triangle



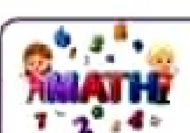
B) In the opposite figure:

m (∠ MAB) = 60°, m (∠ MCD) = 70°

Find by prove m (∠ AMC)



••• End of the questions •••



Prep. 3 _ Model (15)



[Q1] A) Choose the correct answer:

(1) ABCD is cyclic quadrilateral, m (∠A) = 3 m(∠C), then m(∠A) = .

a) 90° b) 45° c) 135° d) 120°

(2) If the radii of two circles M, N are 6 cm , 3 cm, and MN = 2 cm, then the two circles are ....

a) Intersecting b) Distant c) One inside other d) Touching externally

(3) Circle of radius 2 x cm, straight line of distance x+1 cm from its center, then the straight line is ....circle

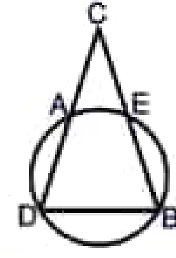
a) Tangent to b) Axis of c) Secant to d) Outside the

B): In the opposite figure:

$\overline{AD}$, $\overline{EB}$ are two equal chords in circle


$\overrightarrow{DA} \cap \overrightarrow{BE}$ = {C}

Prove that: CA = CE



[Q2] A) Choose the correct answer:

(1) Number of common tangent for two concentric circles is ....

a) 3 b) 2 c) 1 d) Zero

(2) Measure of inscribed angle in semicircle = ...°

a) 360 b) 180 c) 120 d) 90

(3) The center of the inscribed circle of triangle is the intersection point of ....

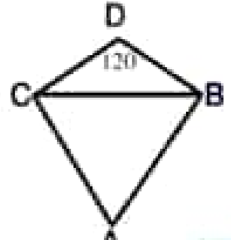
a) Medians b) Axis of sides c) Altitudes d) Bisectors angles

B): In the opposite figure:

ABC is an equilateral triangle,

m (∠ BDC) = 120°

Prove that: ABCD is a cyclic quadrilateral

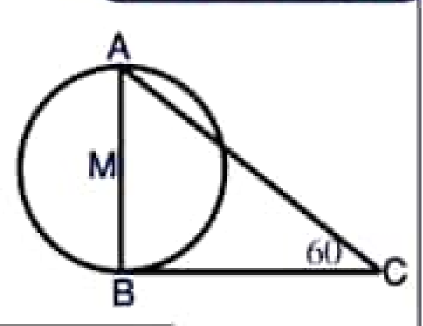


[Q3] A) In the opposite figure:

The circumference of the circle = 44 cm

$\overline{AB}$ is diameter, BC is tangent at B, m ($\angle$ C)= 60°

Find the length of $\overline{BC}$. ($\pi = \frac{22}{7}$)

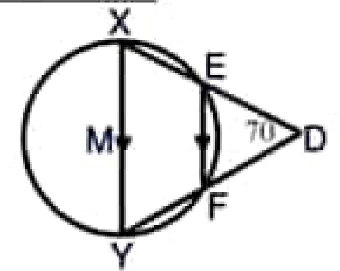


B) In the opposite figure:

$\overline{CD}$ is diameter in circle M,

$\overline{EF}$ is chord such that

$\overline{XY}$ // $\overline{EF}$, m ($\angle$ D) = 70°, Find m ($\widehat{EX}$)



[Q4] A) $\overline{BC}$ is diameter in circle M, $\overline{BY}$ is chord, E $\in \overrightarrow{BY}$ such that BY = YE . Prove that: m ($\angle$ YMC) = 2 m ($\angle$ BEC)

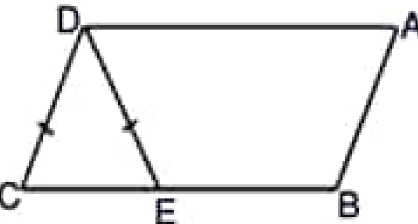
B) In the opposite figure:

ABCD is a parallelogram, E $\in \overrightarrow{BC}$ such that DE = DC

Prove that:

① ABED is cyclic quadrilateral

② $\overrightarrow{DA}$ is tangent to the circle Which passes through vertices of Δ DEC



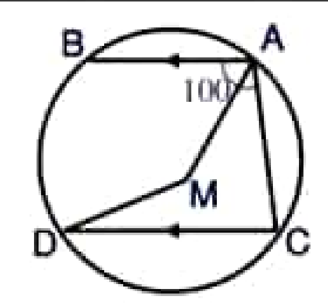
[Q5] In the opposite figure

A) In the opposite figure:

$\overline{AB}$, $\overline{CD}$ are two parallel chords in circle M

M($\angle$BAC) = 100°.

Find m ($\angle$ DMA)



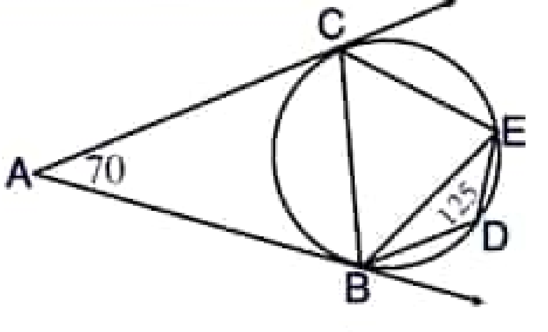
B) In the opposite figure:

$\overline{AB}$ $\overline{AC}$ are two tangents of circle M,

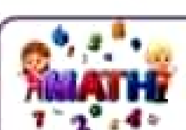
M ($\angle$ A) = 70°, m ($\angle$D) = 125°

① Find m ($\angle$ ABC)

② Prove that CB = BE



••• *End of the questions* •••



Prep. 3 _ Model (16)



[Q1] A) Choose the correct answer:

(1) If the radii of two circles M, N are 9 cm , 4 cm, and MN = 5 cm, then the two circles are ....

a) Intersecting b) Distant c) Touching internally d) Touching externally

(2) The centers of circles which passes through two points A,B lies on

a) $\overline{AB}$ b) Midpoint of $\overline{AB}$ c) Axis of $\overline{AB}$ d) Perpendicular on $\overline{AB}$ at B

(3) Measure of inscribed angle in semicircle = ...°

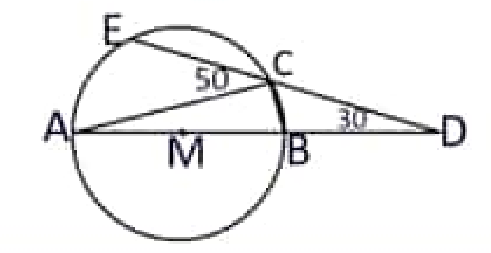
a) 360 b) 180 c) 120 d) 90

B): In the opposite figure:

$\overline{AB}$ is diameter in circle M,

m (∠ D) = 30°, m (∠ ACE) = 50°

Find by proof m(∠CBA)

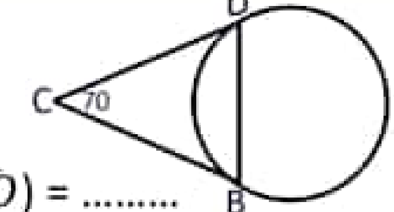


[Q2] A) Choose the correct answer:

(1) In the opposite figure:

$\overline{CB}$, $\overline{CD}$ are two tangents to circle at B , D

m (∠C) = 70° then measure of smaller arc ($\widehat{BD}$) = ...



a) 180 b) 90 c) 100 d) 110

(2) $\widehat{AB}$, $\widehat{CD}$ are two equal arcs in circle M, X , Y are midpoints of $\overline{AB}$, $\overline{CD}$, MX = 3 cm, then MY = ...

a) 3 b) 6 c) $\frac{3}{2}$ d) 4

(3) The length of arc which represents quarter of circle is ....

a) 4 π r b) 2 π r c) π r d) $\frac{1}{2}$ π r

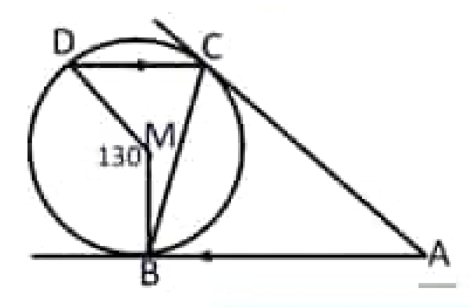
B): In the opposite figure:

$\overline{AB}$, $\overline{AC}$ are two tangents to circle M

$\overline{AB}$ // $\overline{CD}$, m (∠ BMD) = 130°

Prove that: ① $\overrightarrow{CB}$ bisects ∠ ACD

② Find by proof m (∠A)



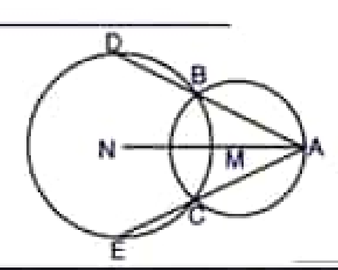
[Q3]

A) By using geometric tools, draw line segment $\overline{AB}$ of length 6 cm then draw $\overline{AC}$ where m ($\angle$ CAB) = 60°, draw a circle passing through two points A , B and its center lies on $\overline{AC}$. Then calculate the length of its center (don't remove arcs)

B) In the opposite figure:

M , N are two intersecting circle at B , C

A $\in \overleftrightarrow{MN}$ Prove that: BD = CE



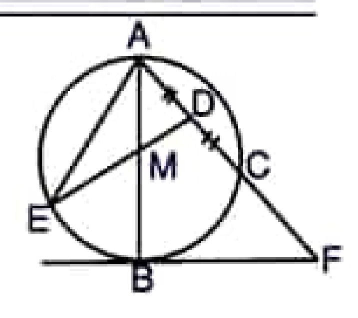
[Q4] A) In the opposite figure:

$\overleftrightarrow{FB}$ is tangent to circle M, $\overline{AB}$ is diameter

D midpoint of $\overline{AC}$

Prove that: ① DOBM is cyclic quadrilateral

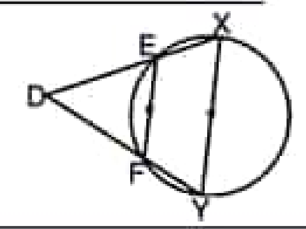
② m($\angle$ AFB) = 2 M (BAE)



B) In the opposite figure:

$\overline{XY}$ is diameter in circle M, $\overline{EF}$ is chord

$\overline{XY}$ // $\overline{EF}$, m ($\angle$D) = 70°, Find m ($\angle$X)



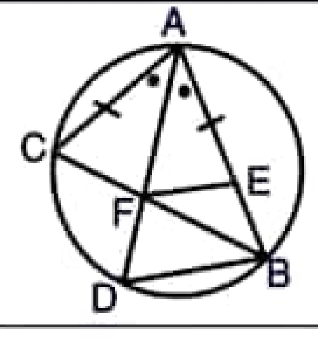
[Q5]

A) In the opposite figure:

AE = AC, $\overline{AD}$ bisects $\angle$ BAC

Prove that:

EBDF is cyclic quadrilateral



B)

$\overline{AB}$ is diameter in circle M, $\overline{AC}$ is chord, m ($\angle$ CAB) = 30°

$\overrightarrow{AC}$ Cuts the tangent at B in D

Prove that:

$\overrightarrow{BA}$ is tangent to the circle passes through Δ BCD

••• *End of the questions* •••



Prep. 3 _ Model (17)



[Q1] A) Choose the correct answer:

(1) One of the following identify unique circle if know

a) Length of radius and point b) Two points

c) One point d) Center and point

(2) Circle of diameter 6 cm, straight line of distant 6 cm, is ....

a) Outside b) Cut it in two points c) Tangent d) Passes the center

(3) If DEFQ is cyclic quadrilateral, ∠ Q is right, then .... is diameter in circle passes through its points

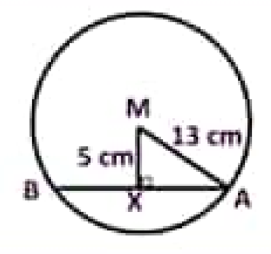
a) $\overline{DQ}$ b) $\overline{EF}$ c) $\overline{FD}$ d) $\overline{DE}$

B): In the opposite figure:

$\overline{AB}$ is chord in circle M, $\overline{MX} \perp \overline{AB}$ cut it in X

MX = 5 cm , KA = 13 cm

Find length of $\overline{AB}$.



[Q2] A) Choose the correct answer:

(1) In the opposite figure:

M(∠A)= 55°, then m (∠ MCB) = ...



a) 180 b) +0 c) 100 d) 110

(2) Number of axes of symmetry of two congruent circles and touching externally is ....

a) 4 b) 2 c) 1 d) Infinite

(3) Two circles of radius 5 cm , 8 cm, are touching if the distance between their centers ∈ ....

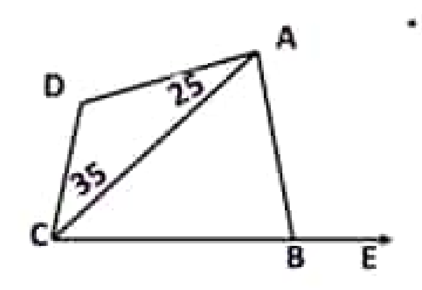
a)] 13 , 3[b)] 3 , 13 [c) R – [3,13] d) {3 , 13}

B):

$\overline{AB}$, is diameter in the circle M, $\overline{AC}$ is chord, draw $\overrightarrow{BE}$ tangent to the circle cut $\overrightarrow{AC}$ at E. Prove that $\overleftrightarrow{AB}$ is tangent to the circle passes through the points B, C, E.

[Q3]

A) In the opposite figure:

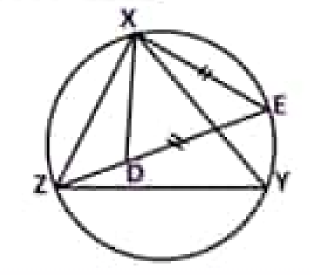


ABCD is cyclic quadrilateral, m(∠ACD) = 35°

m(∠(CAD) = 25°, E ∈ $\overrightarrow{CB}$, E ∉ $\overline{CB}$.

Find m (∠ ABE)

B) In the opposite figure:



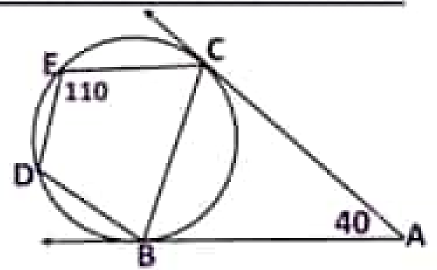
XYZ is an equilateral triangle drawn in circle

E ∈ $\overline{XY}$, D ∈ $\overline{EZ}$ where ED = EX

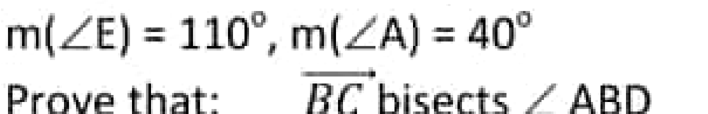
Prove that: XD = ED

[Q4]

A) In the opposite figure:



$\overrightarrow{AB}$, $\overrightarrow{AC}$ are two tangents to circle M at B, C



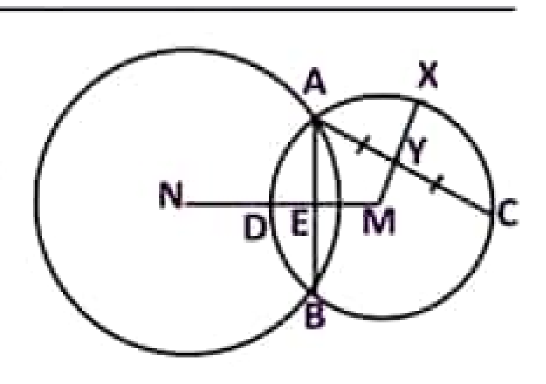
m(∠E) = 110°, m(∠A) = 40°

Prove that: $\overrightarrow{BC}$ bisects ∠ ABD

B) M, N are two circles are touching externally at A, Draw $\overrightarrow{BA}$, $\overrightarrow{CA}$ cut M at B , C and cut N in D, E, If m(∠BMC) = 140°. Find m ($\widehat{ED}$)

[Q5]

A) In the opposite figure:



M, N are two circles intersecting at A, B

Y ∈ AC, $\overline{MY}$ cut the circle M in X

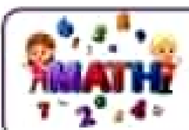
$\overline{MN}$ cut $\overline{AB}$ in E and cut circle M in D

If AE = AY. Prove that DE = XY

B) XYZL is a parallelogram, ∠ X is acute angle. F ∈ $\overrightarrow{ZL}$, F ∉ $\overline{ZL}$ where YF = XL. Prove that: XYLF is cyclic quadrilateral

---

••• End of the questions •••



Prep. 3 _ Model (18)



[Q1] A) Choose the correct answer:

(1) Two intersecting circles their radii are 5 cm , 3cm, then MN∈.....

a)]8,∞[b)]2,∞[c)]0,2] d)]2,8[

(2) Can't draw circle passes through vertices of ....

a) Triangle b) Rectangle c) Rhombus d) Square

(3) The minor arc in the circle is opposite to inscribed angle ....

a) Acute b) Obtuse c) Right d) reflex

B):

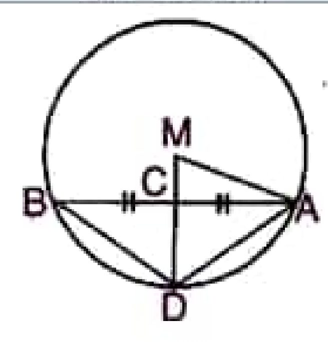
In the opposite figure:

The radius of circle M is 13 cm,

$\overline{AB}$ is chord in circle of 24 cm

C is midpoint of $\overline{AB}$, $\overrightarrow{MC}$ ∩ circle = {D}

Find by proof area of Δ ADB



[Q2] A) Choose the correct answer:

(1) The center of the inscribed circle of triangle is the intersection point of ....

a) Medians b) Axis of sides c) Altitudes d) Bisectors angles

(2) The number of common tangents of concentric circles is ......

a) Zero b) One c) Two d) Three

(3) The radius length of the smallest circle passes through endpoints of line segment .... Half its length

a) Less than b) More than c) Equal d) double

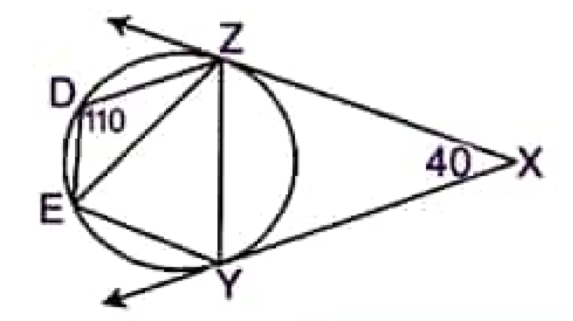
B):

In the opposite figure:

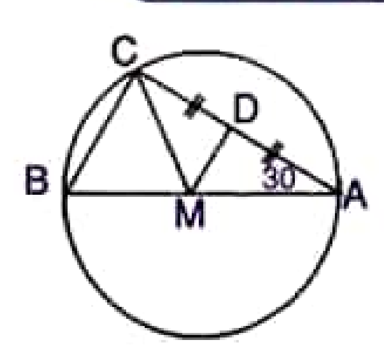
$\overrightarrow{XY}$, $\overrightarrow{XZ}$ are two tangents to circle M,

m (∠ D) = 110° , m (∠ X) = 40°

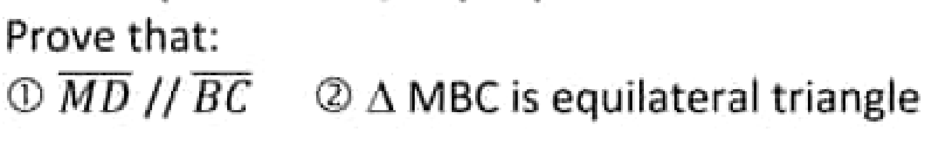
Prove that: m (ZY) = m(∠ZDE)



[Q3] A) In the opposite figure:



$\overline{AB}$ is a diameter in circle M, $\overline{AC}$ is chord
D is midpoint in $\overline{AC}$, m ($\angle$A) = 30°
Prove that:

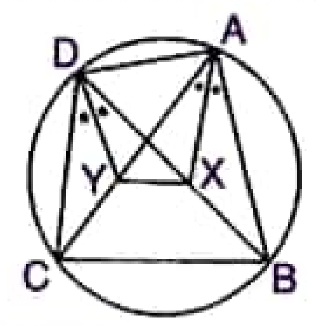

① $\overline{MD} \parallel \overline{BC}$ ② Δ MBC is equilateral triangle

---

B) $\overline{XY}$ is diameter in circle M, $\overline{XZ}$ is chord, E is midpoint of $\overline{XZ}$, draw $\overrightarrow{YD}$ tangent to circle cut $\overrightarrow{XZ}$ in D, draw $\overrightarrow{EM}$ cut the circle in F.
prove that: ① MEDY is cyclic quadrilateral
② m ($\angle$D) = 2 m ($\angle$F X Y)

[Q4]

A) In the opposite figure:

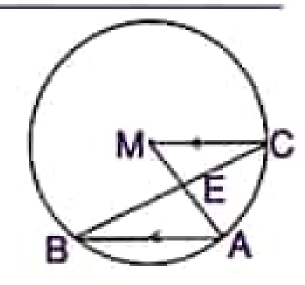


ABCD is cyclic quadrilateral, $\overrightarrow{AX}$ bisects $\angle$ BAC,
$\overrightarrow{YD}$ bisects $\angle$ BDC, Prove that:



① AXYD is cyclic quadrilateral ② $\overline{XY} \parallel \overline{BC}$

B) In the opposite figure:

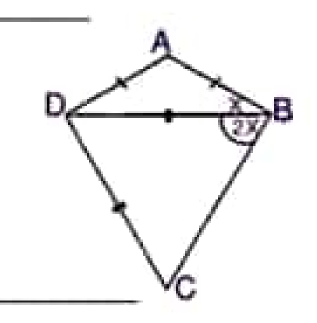


$\overline{AB}$ is diameter in circle M, $\overline{CM} \parallel \overline{AB}$
$\overline{CB} \cap \overline{AM}$ = { E }
Prove that: $\overline{BE} < \overline{AE}$

[Q5]

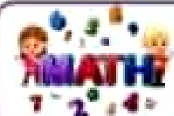
A) $\overline{AB}$ is a diameter in circle M, AC is chord in it, draw BD tangent to circle M cut AC in D, m ($\angle$ D) = 50°. Prove that: $\overline{AB}$ is tangent to circle passes through vertices of Δ CBD

B) In the opposite figure:



AB = AD, DB = DC,
m ($\angle$ ABD) = X , m ($\angle$ CBD) = 2 X
Prove that: ABCD is cyclic quadrilateral

••• End of the questions •••



Prep. 3 _ Model (19)



[Q1] A) Choose the correct answer:

(1) The two tangents drawn to the circle at the endpoints of its diameter are............

a) Parallel b) Equal c) Coincides d) Intersecting

(2) Circle of diameter 8 cm, straight line of distant 3 cm from its center is .... the circle

a) Outside b) Touch c) Secant to d) Axis of symmetry

(3) <u>In the opposite figure:</u>

MA, MB are to perpendicular radii

$\overleftrightarrow{DE}$ is axis of symmetry of $\overline{MA}$, then m ($\widehat{BD}$) = ...



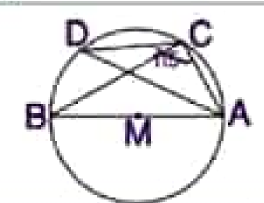
a) 30 b) 45 c) 90 d) 135



B): <u>In the opposite figure:</u>

$\overline{AB}$ is diameter in circle. M (∠ACD) = 115°

Find by proof m (∠ B A D)



[Q2] A) Choose the correct answer:

(1) <u>In the opposite figure:</u>

$\overline{MA} \perp \overline{MB}$, then m (∠ ACB) = ...


a) 90 b) 135 c) 110  d) 270

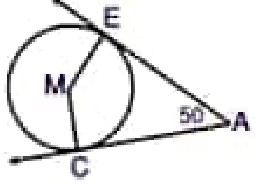
(2) The measure of arc which represents third the circle equal ...

a) 60 b) 90 c) 120 d) 240

(3) In the opposite figure:

$\overrightarrow{AE}$, $\overrightarrow{AC}$ are two tangent to the circle

M($\widehat{CE}$) = ...

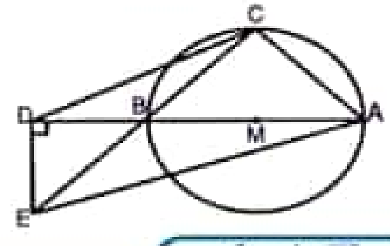


a) 100 b) 120 c) 130 d) 50

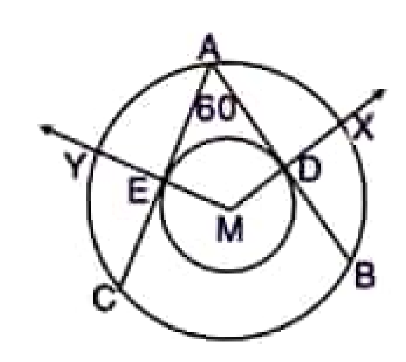
B): <u>In the opposite figure:</u>

$\overline{AB}$ is diameter in circle M, $\overline{ED} \perp \overline{AD}$

Prove that AEDC is cyclic quadrilateral



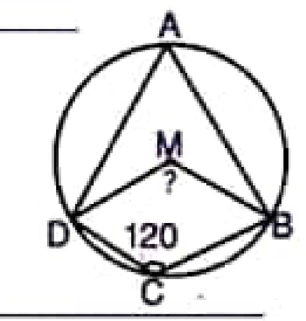
[Q3] A) In the opposite figure:



Two concentric circles at center M,
$\overline{AB}$, $\overline{AC}$ two chords in greatest circle
Touching the smallest circle in D, E
Draw $\overrightarrow{MD}$, $\overrightarrow{ME}$ cut the greatest circle in X , Y
$M(\angle DAE) = 60^\circ$. ① Find $m(\angle DME)$
② Prove that: XD = YE



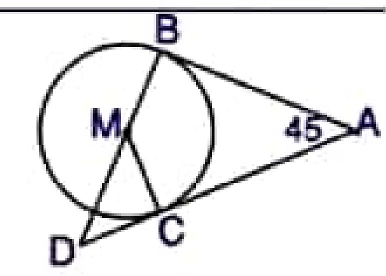
B) In the opposite figure:



A circle M , $m(\angle BCD) = 120^\circ$,
Find by proof:
$m(\angle BAD)$, $m(\angle BCD)$

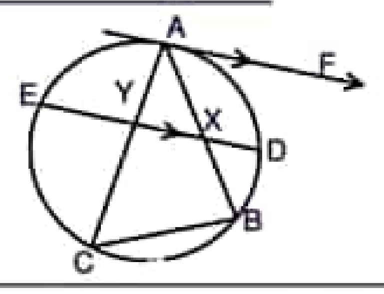
[Q4]

A) In the opposite figure:



A circle M, $\overline{AB}$, $\overline{AC}$ are two tangent at B, C
$M(\angle A) = 45^\circ$, Prove that: AD = AB + MB

B) In the opposite figure:

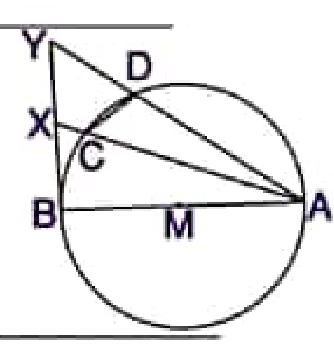


$\overline{AF}$ is tangent to circle M, $\overline{DE} \parallel \overline{AF}$
And cut $\overline{AB}$ in X, cut $\overline{AC}$ in Y
Prove that: XBCY is cyclic quadrilateral

[Q5]

A) Draw $\overline{AB}$ of length 6 cm, then draw a circle passing through A , B and its radius 5 cm. (find possible solution)

B) In the opposite figure:



$\overline{AB}$ is a diameter in circle M, $\overline{YB}$ is tangent.

Prove that: DCXY is cyclic quadrilateral

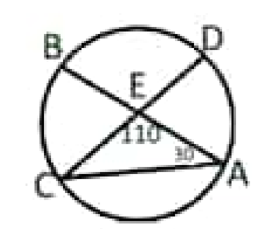
••• End of the questions •••



Prep. 3 _ Model (20)

[Q1] A) Choose the correct answer:

(1) In the opposite figure:
If m(∠A) = 30°, m(∠AEC)= 110°
Then m (A D) = ... °

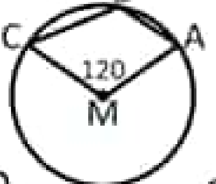


a) 40 b) 55 c) 80 d) 110

(2) If AB = 6 cm, then the area of the smallest circle passing through A , B = ... cm^2

a) 3 π b) 6 π c) 8 π d) 9 π

(3) In the opposite figure:
M(∠AMC) = 120°,
Then m (∠ ABC)= ....°



a) 60 b) 120 c) 240 d) 360

B): In the opposite figure:

ABCD is trapezium, $\overline{AD}$ // $\overline{BC}$, $\overline{AC} \cap \overline{BD}$ = {E}. If E B = E C
Prove that: ABCD is cyclic quadrilateral

[Q2] A) Choose the correct answer:

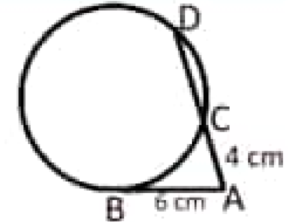
(1) The center of the circumcircle of triangle is the intersection point of ....

a) Medians b) Axis of sides c) Altitudes d) Bisectors angles

(2) In the opposite figure:
$\overline{AB}$, $\overline{AC}$ are two tangents to circle M
M(∠MBC) = 25°, then m(∠BAC) = ...

a) 75° b) 50° c) 25° d) 12° 30'

(3) In the opposite figure:
$\overline{AB}$ is tangent to circle
AB = 6 cm, AC = 4 cm
Then CD = ... cm



a) 5 b) 9 c) 12 d) 36

B): Two intersecting circles in A , B. Draw AC tangent to first circle cut the second circle in C, BD tangent to second circle cut the first in D

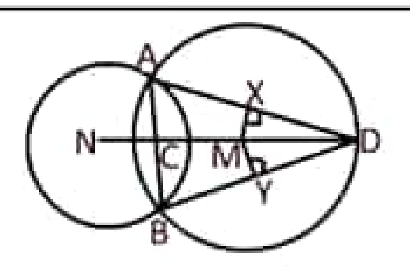
Prove that: $\overline{AD} \parallel \overline{BC}$

[Q3] A) In the opposite figure:

M, N are two intersecting circles in A , B

$\overline{MX} \perp \overline{AD}$, $\overline{MY} \perp \overline{BD}$

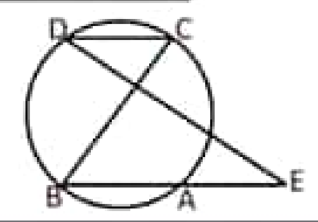
Prove that: M X = M Y



B) In the opposite figure:

E is point outside the circle

Prove that: m (∠ E) < m (∠ BCD)



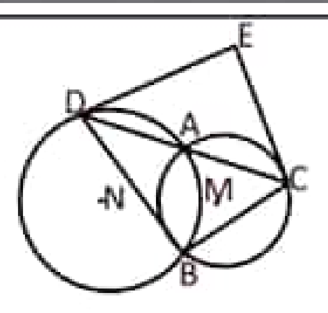
[Q4] A) In the opposite figure:

M, N are two intersecting circles in A , B

$\overrightarrow{EC}$ is tangent to the circle M at C,

$\overrightarrow{DC}$ is tangent to the circle N at D,

Prove that: ECDB is cyclic quadrilateral



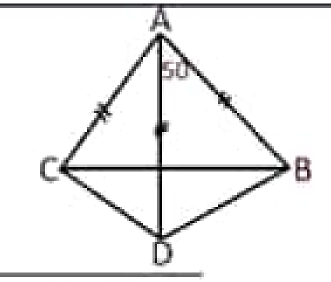
B) By using geometric tools, draw Δ ABC in which A B = 4 cm, BC = 5 cm, AC = 6 cm, then draw the circle passing through A, B, C.

[Q5]

A) In the opposite figure:

A B = AC = AD, m (∠ BAD) = 50°

Find m (∠ BCD)

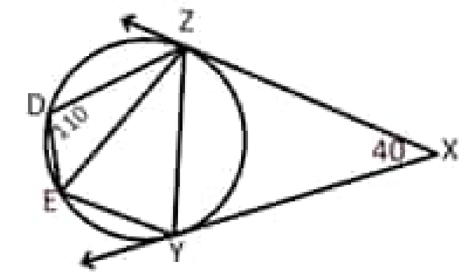


B) In the opposite figure:

$\overline{XY}$, $\overline{XZ}$ are two tangents to the circle

M (∠ YXZ) = 40° , m (∠ Z D E) = 110°

Prove that: Z E = Z Y



••• *End of the questions* •••

1 Giza Governorate



Answer the following questions :

1 Choose the correct answer :

(1) The measure of the inscribed angle is .... the measure of the central angle , subtended by the same arc.

(a) half (b) third (c) quarter (d) double

(2) It is possible to draw a circle passing through the vertices of a ....

(a) trapezium. (b) parallelogram. (c) rectangle. (d) rhombus.

(3) The centre of the inscribed circle of any triangle is the point of intersection of its ....

(a) altitudes. (b) medians.

(c) axes of symmetry of its sides. (d) bisectors of its interior angles.

(4) If the two circles M and N are touching internally , the radius length of one of them = 3 cm. and MN = 8 cm. , then the radius length of the other circle = ... cm.

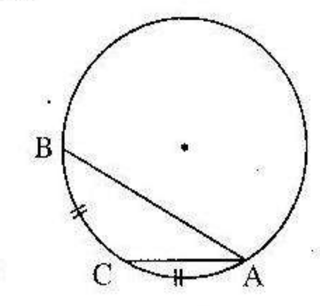
(a) 12 (b) 11 (c) 6 (d) 5

(5) **In the opposite figure :**

If $E \in \overrightarrow{BC}$, $\overrightarrow{CX}$ bisects $\angle DCE$

, $m(\angle XCE) = 62°$

, then $m(\angle A) = $ ....



(a) 62° (b) 118° (c) 56° (d) 124°

(6) **In the opposite figure :**

If C is the midpoint of $\overset{\frown}{AB}$

, then AB .... 2 AC

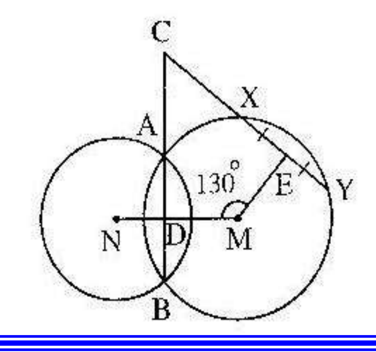
(a) < (b) > (c) ≥ (d) =

2 [a] **In the opposite figure :**

If E is the midpoint of $\overline{XY}$

, $m(\angle EMN) = 130°$

, **then find :** $m(\angle C)$



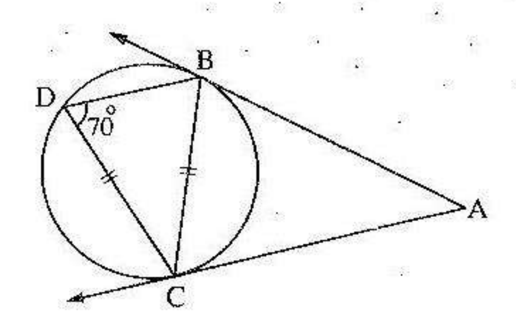
[b] **In the opposite figure :**

If $\overrightarrow{AB}$, $\overrightarrow{AC}$ are two tangents to the circle at B , C

, m (∠ D) = 70° , CB = CD

(1) **Find :** m (∠ A)

(2) **Prove that :** $\overline{BD}$ // $\overline{AC}$



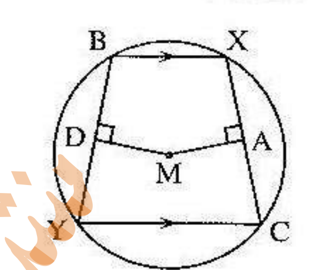
---

3 [a] **In the opposite figure :**

$\overline{XB}$ // $\overline{CY}$, $\overline{MA}$ ⊥ $\overline{XC}$

, $\overline{MD}$ ⊥ $\overline{BY}$

Prove that : MA = MD



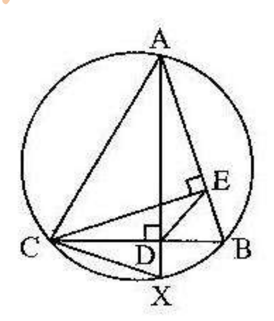
[b] **In the opposite figure :**

$\overline{CE}$ ⊥ $\overline{AB}$, $\overrightarrow{AD}$ ⊥ $\overline{BC}$ and intersects the circle at X

Prove that :

(1) AEDC is a cyclic quadrilateral.

(2) $\overrightarrow{CB}$ bisects ∠ ECX

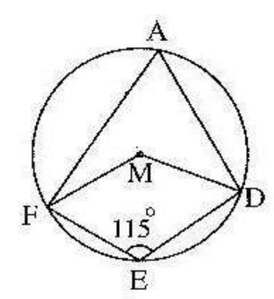


---

4 [a] **In the opposite figure :**

If m (∠ DEF) = 115°

, **then find :** m (∠ DMF)



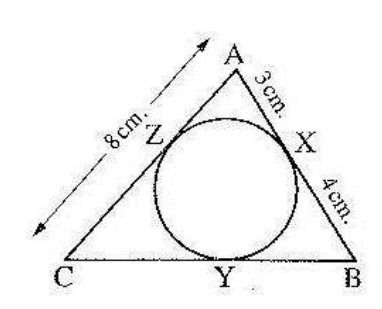
[b] **In the opposite figure :**

Inscribed circle of the triangle ABC touches

its sides at X , Y and Z

If AX = 3 cm. , XB = 4 cm. , AC = 8 cm.

Find : The length of $\overline{BC}$



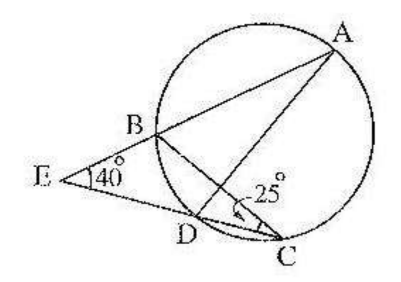
---

5 [a] **In the opposite figure :**

$\overrightarrow{AB}$ ∩ $\overrightarrow{CD}$ = {E} , m (∠ C) = 25°

, m (∠ E) = 40°

Find : m (∠ ADC)



[b] In the opposite figure :

$\overline{AB}$ is a diameter in the circle M

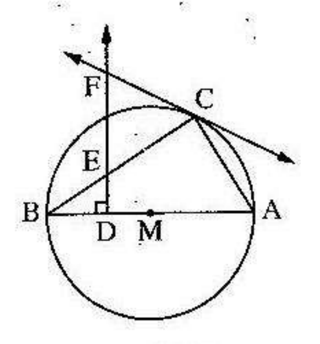
, $\overleftrightarrow{CF}$ is a tangent to the circle at C

, $\overrightarrow{DF} \perp \overline{AB}$ and intersects $\overline{BC}$ at E

Prove that :

(1) ADEC is a cyclic quadrilateral.

(2) Δ FCE is an isosceles triangle.



2 Alexandria Governorate

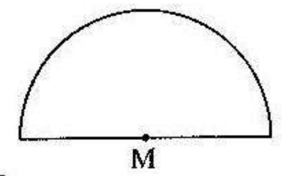
Answer the following questions :

1 Choose the correct answer from those given :

(1) The two opposite angles in the cyclic quadrilateral are ....

(a) equal. (b) supplementary. (c) complementary. (d) alternate.

(2) The opposite figure represents a semicircle its centre is M and its radius length is r length unit, then the area of the opposite figure = ... square units.



(a) $2 \pi r$ (b) πr (c) πr^2 (d) $\frac{\pi r^2}{2}$

(3) In a regular hexagon , the measure of the angle of its vertex equals ....

(a) 60° (b) 108° (c) 120° (d) 135°

(4) If $\overline{AB}$ is a line segment , then the number of circles can be drawn passing through A and B equals ....

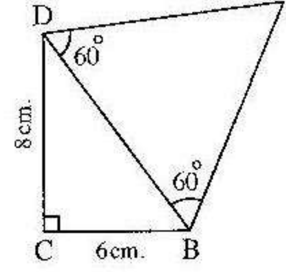
(a) 1 (b) 2 (c) 3 (d) an infinite number.

(5) **In the opposite figure :**

The length of $\overline{AB}$ = ... cm.

(a) $10\sqrt{3}$ (b) 10

(c) 5 (d) $5\sqrt{3}$



(6) The inscribed angle which is opposite to the minor arc in a circle is ....

(a) acute. (b) right. (c) obtuse. (d) reflex.

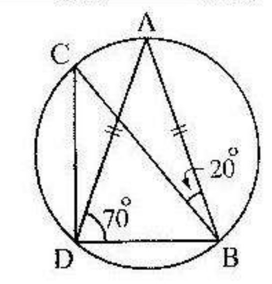
2 [a] **In the opposite figure :**

AB = AD

, m (∠ ABC) = 20°

, m (∠ ADB) = 70°

Find : m (∠ C) , m (∠ BDC)



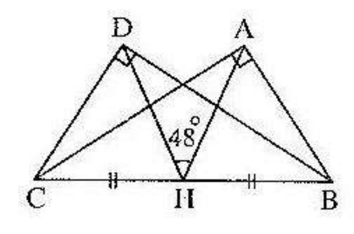
[b] **In the opposite figure :**

$m(\angle BAC) = m(\angle BDC) = 90^\circ$

, H is the midpoint of $\overline{BC}$ and $m(\angle AHD) = 48^\circ$

(1) **Prove that :** ABCD is a cyclic quadrilateral.

(2) **Find :** $m(\angle ABD)$



---

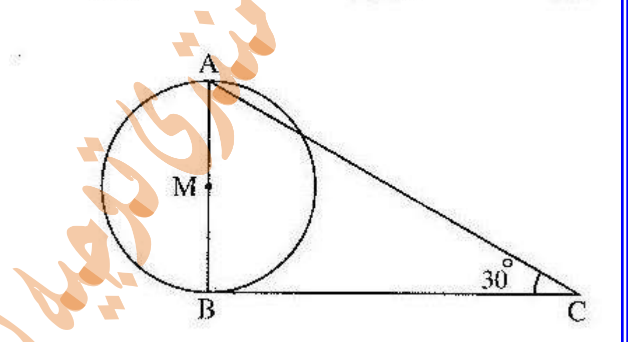
3 [a] **In the opposite figure :**

A circle M of circumference 44 cm.

, $\overline{AB}$ is a diameter , $\overline{BC}$ is a tangent at B

and $m(\angle ACB) = 30^\circ$

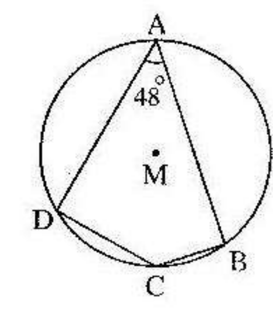
Find : The length of $\overline{BC}$ $\left(\pi = \frac{22}{7}\right)$



[b] **In the opposite figure :**

If M is a circle , $m(\angle A) = 48^\circ$

Find : $m(\widehat{BD}$ the major)



---

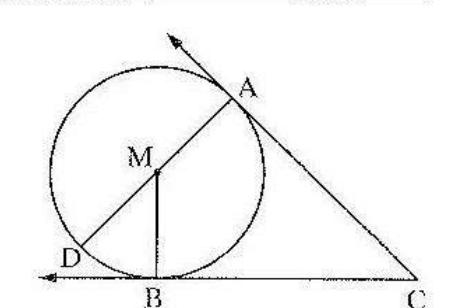
4 [a] **In the opposite figure :**

$\overline{AD}$ is a diameter in a circle M

, $\overrightarrow{CA}$ and $\overrightarrow{CB}$ are two tangents to the circle M ,

touch it at A and B respectively.

Prove that : $m(\angle DMB) = m(\angle ACB)$



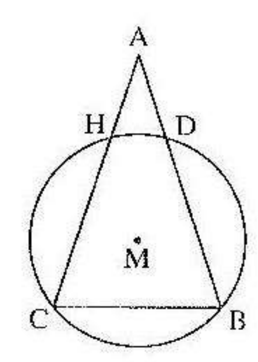
[b] **In the opposite figure :**

ABC is a triangle in which AB = AC

, $\overline{BC}$ is a chord in the circle M

, if $\overline{AB}$ and $\overline{AC}$ cut the circle at D and H respectively.

Prove that : $m(\widehat{DB}) = m(\widehat{HC})$



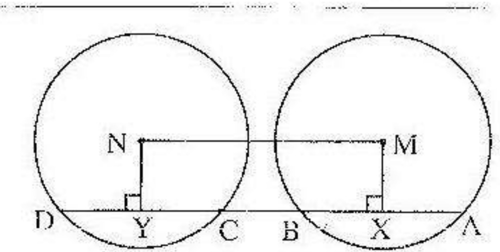
---

5 [a] **In the opposite figure :**

M and N are two congruent circles

, AB = CD

Prove that : The figure MXYN is a rectangle.



[b] ABCD is a quadrilateral inscribed in a circle , H is a point outside the circle and $\overrightarrow{HA}$ and $\overrightarrow{HB}$ are two tangents to the circle at A and B , if m (∠ AHB) = 70° and m (∠ ADC) = 125° , **prove that :**

(1) AB = AC

(2) $\overleftrightarrow{AC}$ is a tangent to the circle passing through the points A , B and H

3 El-Kalyoubia Governorate



Answer the following questions :

1 Choose the correct answer :

(1) If the area of the circle is 9 π cm², then its radius length = ... cm.

(a) 9 (b) 2 (c) (– 3) (d) 3

(2) The number of symmetric axes of a square = ...

(a) 1 (b) 2 (c) 3 (d) 4

(3) If M is a circle of a diameter length equals 14 cm. , MA = (2 X + 3) cm. where A lies on the circle , then X = ...

(a) 5 (b) 3 (c) 2 (d) 1

(4) The raito between the measure of the inscribed angle and the measure of the central angle subtended by the same arc = ...

(a) 1 : 2 (b) 2 : 1 (c) 1 : 1 (d) 1 : 3

(5) If ABCD is a cyclic quadrilateral and m (∠ B) = $\frac{1}{2}$ m (∠ D) , then m (∠ B) = ...

(a) 90° (b) 60° (c) 120° (d) 180°

(6) If the figure ABCD ~ the figure XYZL , then m (∠ B) = m (∠ ....)

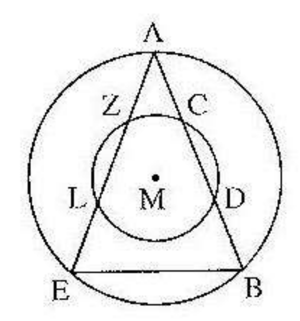
(a) X (b) Y (c) Z (d) L

2 [a] **In the opposite figure :**

Two concentric circles at M

, m (∠ ABE) = m (∠ AEB)

Prove that : CD = ZL

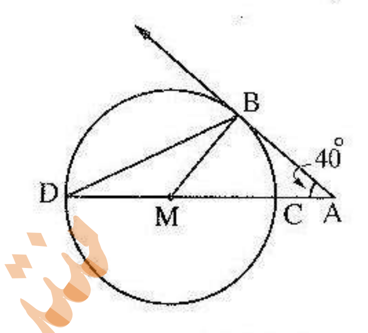


[b] **In the opposite figure :**

$\overrightarrow{AB}$ is a tangent to the circle M

, m (∠ A) = 40°

Find with proof : m (∠ BDC)



---

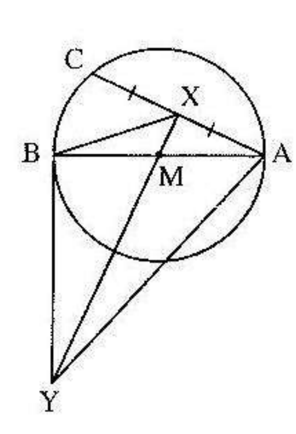
3 [a] Using your geometric tools , draw $\overline{AB}$ with a length of 4 cm. , then draw a circle passing through the two points A and B whose radius length is 3 cm.
What are the possible solutions ? (Don't remove the arcs)

[b] **In the opposite figure :**

$\overline{AB}$ is a diameter in the circle M

, X is the midpoint of $\overline{AC}$ and $\overrightarrow{XM}$ intersecting the tangnet of the circle at B in Y

Prove that : The figure AXBY is a cyclic quadrilateral.



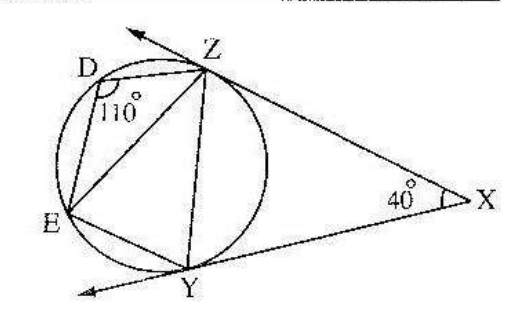
---

4 [a] **In the opposite figure :**

$\overrightarrow{XY}$ and $\overrightarrow{XZ}$ are two tangents to the circle at the two points Y and Z , m (∠ X) = 40°

, m (∠ D) = 110°

Prove that : m (∠ ZYE) = m (∠ ZEY)

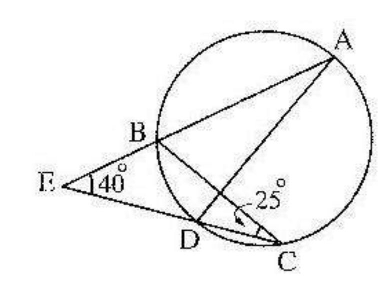


[b] **In the opposite figure :**

m (∠ E) = 40° , m (∠ C) = 25°

Find with proof :

(1) m (∠ ADC) (2) m ($\overset{\frown}{AC}$)



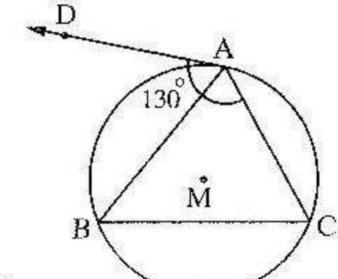
---

5 [a] **In the opposite figure :**

$\overrightarrow{AD}$ is the tangent to the circle M at A

, m (∠ DAC) = 130°

Find with proof : m (∠ B)



[b] ABCD is a quadrilateral drawn in a circle , E ∈ $\overrightarrow{AB}$, E ∉ $\overline{AB}$

, m ($\overset{\frown}{AB}$) = 110° , m (∠ CBE) = 85°

Find with proof : m (∠ BDC)

4 El-Sharkia Governorate



Answer the following questions : *(Calculator is allowed)*

1 **Choose the correct answer from those given :**

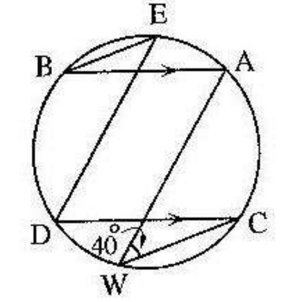
(1) The two tangents which are drawn from the two endpoints of a diameter of a circle are ....

(a) parallel. (b) perpendicular. (c) coincide. (d) intersecting.

(2) The number of the axes of symmetry of the semicircle .... the number of the axes of symmetry of the isosceles triangle.

(a) > (b) < (c) = (d) ≥

(3) **In the opposite figure :**



$\overline{AB} // \overline{CD}$, m (∠ AWC) = 40° ,

then m (∠ DEB) = ...

(a) 50° (b) 40°

(c) 30° (d) 45°

(4) A circle , its radius length $(2X + 6)$ cm. and the straight line L is at distance $(X + 2)$ cm. from its centre where $X > 0$, then L is ....

(a) outside the circle. (b) a tangent to the circle.

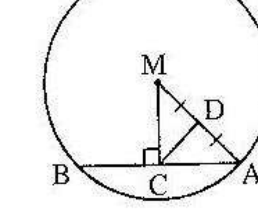
(c) a secant to the circle. (d) passing through the centre.

(5) If the straight line $\overleftrightarrow{AB} \cap$ the circle M = {A , B}

, then $\overleftrightarrow{AB} \cap$ the surface of the circle M = ...

(a) {A , B} (b) $\overline{AB}$ (c) $\overrightarrow{AB}$ (d) $\overrightarrow{BA}$

(6) **In the opposite figure :**



CD = 3 cm. , $\overline{MC} \perp \overline{AB}$

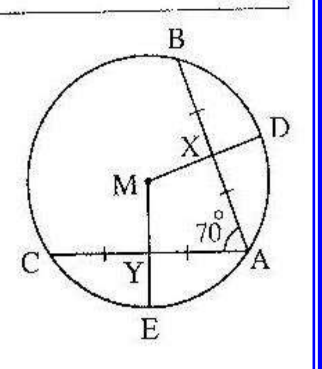
, D is the midpoint of $\overline{MA}$

then the area of the circle M = ... π cm²

(a) 3 (b) 6 (c) 9 (d) 36

---

2 **[a] In the opposite figure :**



$\overline{AB}$ and $\overline{AC}$ are two chords equal in length at the circle M

, X is the midpoint of $\overline{AB}$

, Y is the midpoint of $\overline{AC}$, m (∠ A) = 70°

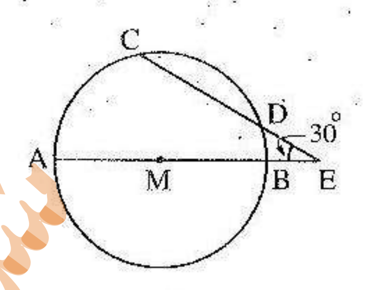
(1) **Find :** m (∠ DME) (2) **Prove that :** XD = YE

[b] **In the opposite figure :**

$\overline{AB}$ is a diameter in the circle M

, $\overrightarrow{AB} \cap \overrightarrow{CD} = \{E\}$, m (∠ E) = 30° , m $(\widehat{AC})$ = 80°

Find : m $(\widehat{CD})$

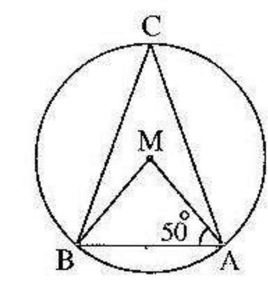


3 [a] **Complete :** The measure of the inscribed angle equals .... the measure of the central angle .... by the same arc.

[b] **In the opposite figure :**

M is a circle , m (∠ MAB) = 50°

Find : m (∠ C)

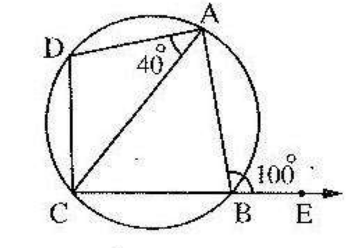


4 [a] **In the opposite figure :**

m (∠ ABE) = 100°

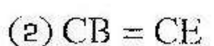
, m (∠ CAD) = 40°

Prove that : Δ DAC is an isosceles triangle.



[b] **In the opposite figure :**

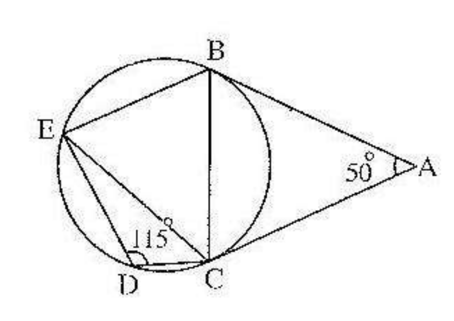
$\overline{AB}$ and $\overline{AC}$ are two tangent-segments



to the circle at B and C

, m (∠ A) = 50° , m (∠ D) = 115°

Prove that : (1) $\overrightarrow{BC}$ bisects ∠ ABE   (2) CB = CE



5 [a] **Complete :** The measure of the inscribed angle in a semicircle equals ....°

[b] **In the opposite figure :**

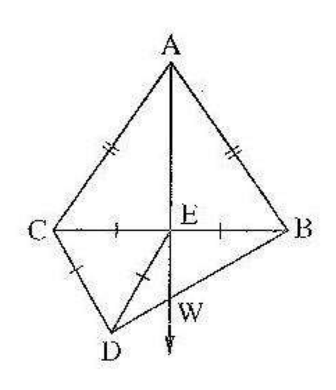
ABC and DCE are two equilateral triangles

, E is the midpoint of $\overline{BC}$, $\overrightarrow{AE} \cap \overline{BD} = \{W\}$

(1) **Prove that :** $\overline{AC}$ is a tangent-segment to the circle which passes through the vertices of Δ CED

(2) **Prove that :** CDWE is a cyclic quadrilateral.

(3) **Find :** The centre of the circle which passes through the vertices of the quadrilateral CDWE



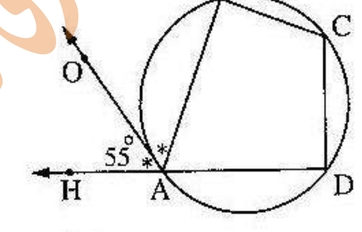


5 El-Monofia Governorate

Answer the following questions : (Calculator is allowed)

1 **Choose the correct answer :**

(1) **In the opposite figure :**



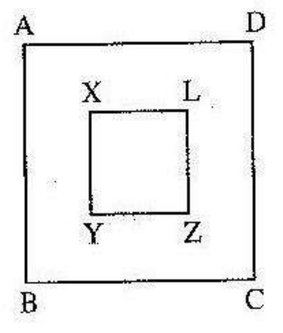
$H \in \overrightarrow{DA}$, $\overrightarrow{AO}$ bisects $\angle$ HAB

, m ($\angle$ HAO) = 55°

, then m ($\angle$ C) = ...

(a) 55° (b) 75° (c) 110° (d) 125°

(2) **In the opposite figure :**



If the side length of the square ABCD = 7 cm.

and the side length of the square XYZL = 3 cm.

, then the area of the shaded part = ... cm².

(a) (7 – 3) (b) 4 (7 – 3)

(c) $(7-3)^2$ (d) $(7^2 - 3^2)$

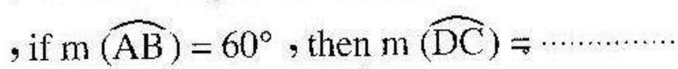
(3) If $\overleftrightarrow{AB} \cap$ the circle M = {A , B} , then $\overleftrightarrow{AB} \cap$ the surface of the circle M = ...

(a) $\overleftrightarrow{AB}$ (b) $\overline{AB}$ (c) {A , B} (d) $\overrightarrow{AB}$

(4) **In the opposite figure :**

Two concentric circles with centre M

, the radii lengths of them are 6 cm. and 3 cm.



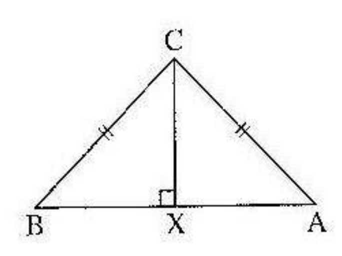
, if m $(\overset{\frown}{AB})$ = 60° , then m $(\overset{\frown}{DC})$ = ...

(a) 60° (b) 30° (c) 120° (d) 40°

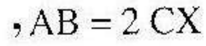
(5) If $\overline{MA}$ and $\overline{MB}$ are two perpendicular radii in a circle M and the area of triangle AMB = 8 cm², then the length of radius of this circle = ...

(a) 8 cm. (b) 16 cm. (c) 4 cm. (d) 2 cm.

(6) **In the opposite figure :**



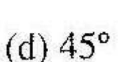
CA = CB , $\overline{CX} \perp \overline{AB}$



, AB = 2 CX

, then m ($\angle$ A) = ...

(a) 30° (b) 60° (c) 90° (d) 45°



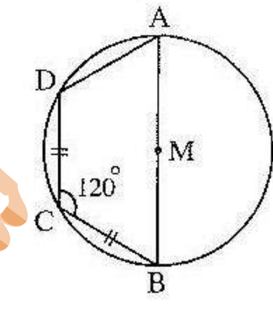
2 [a] **In the opposite figure :**

ABCD is a quadrilateral inscribed in the circle M

, $M \in \overline{AB}$, CB = CD

, m (∠ BCD) = 120°

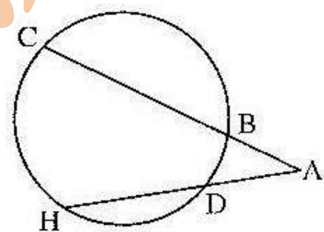
Find : (1) m (∠ A) (2) m (∠ D)



[b] **In the opposite figure :**

If m $(\overset{\frown}{HC})$ = 100° , m $(\overset{\frown}{BD})$ = 30°

Find : m (∠ A)





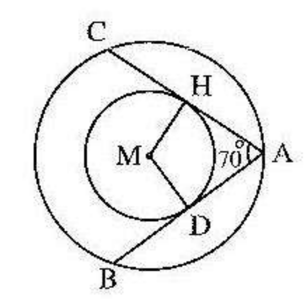
3 [a] **In the opposite figure :**

Two concentric circles at M

, $\overline{AB}$ and $\overline{AC}$ are two tangents to the smaller circle

, m (∠ A) = 70°

(1) **Find :** m (∠ DMH) (2) **Prove that :** AB = AC

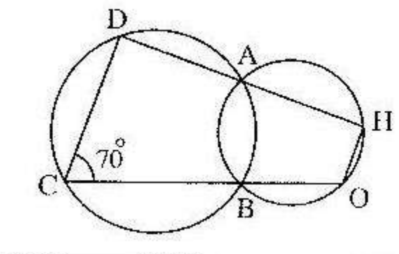


[b] **In the opposite figure :**

Two intersecting circles at A and B , m (∠ C) = 70°

(1) **Find :** m (∠ O)

(2) **Prove that :** $\overline{CD}$ // $\overline{HO}$



4 [a] $\overline{AB}$ is a diameter in the circle M , $\overline{AC}$ is a chord such that m (∠ BAC) = 30°

, draw $\overline{BC}$ and draw $\overline{MD} \perp \overline{AC}$ and cut it at D

(1) **Prove that :** $\overline{MD}$ // $\overline{BC}$

(2) **Porve that :** The length $\overline{BC}$ = the length of the radius of this circle.

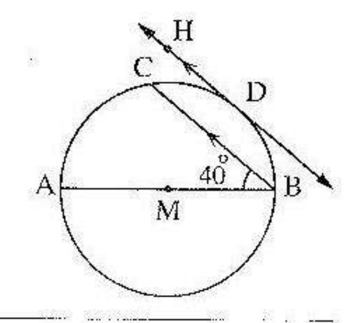
[b] **In the opposite figure :**

$\overline{AB}$ is a diameter in the circle M

, m (∠ B) = 40° , $\overleftrightarrow{DH}$ is a tangent at D

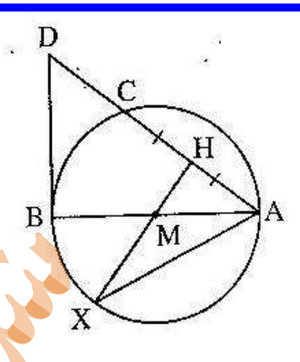
, $\overleftrightarrow{DH}$ // $\overline{BC}$

Find : m $(\overset{\frown}{DC})$



5 [a] If circle with radius length 5 cm. , A is a point in its plane where MA = (2 X − 3) cm.

Find the value of X if A is located outside the circle.



[b] In the opposite figure :

$\overline{AB}$ is a diameter of the circle M , H is a midpoint of a chord $\overline{AC}$

, $\overline{BD}$ is a tangent to the circle at B

, $\overrightarrow{HM}$ cuts the circle at X , **porve that :**

(1) MHDB is a cyclic quadrilateral.

(2) m (∠ BAX) = $\frac{1}{2}$ m (∠ D)

(3) $\overleftrightarrow{AB}$ is a tangent to the circle passing through the points B , C and D

6 El-Gharbia Governorate



Answer the following questions :

1 Choose the correct answer from those given :

(1) If the length of a diameter of a circle is 8 cm. and the straight line L at a distance of 4 cm. from its centre , then L is ....

(a) a secant to the circle at two points. (b) lying outside the circle.

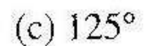
(c) a tangent to the circle. (d) an axis of symmetry to the circle.

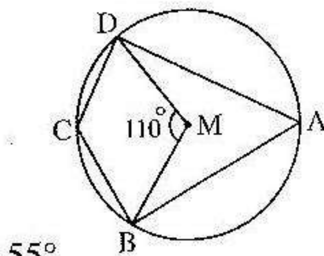
(2) **In the opposite figure :**

If M is the centre of the circle

, m (∠ BMD) = 110°

, then m (∠ C) = ...





(a) 70° (b) 110° (c) 125° (d) 55°

(3) **In the opposite figure :**

$\overline{AB}$ is a tangent of the circle M

, then m (∠ ABC) = ...

(a) 120° (b) 110°

(c) 90° (d) 30°

(4) The centre of the inscribed circle of any triangle is the intersection point ....

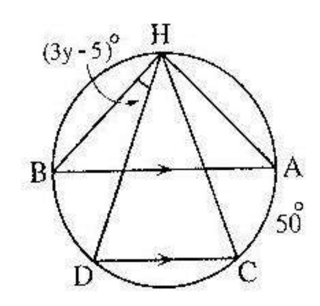
(a) its medians. (b) its heights.

(c) the symmetric axes of its sides. (d) bisectors of its interior angles.

(5) **In the opposite figure :**

m $(\overset{\frown}{AC})$ = 50° , $\overline{AB}$ // $\overline{CD}$

, then the value of y = ...



(a) 5° (b) 10°

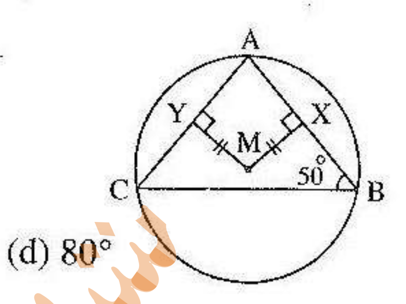
(c) 15° (d) 20°

(6) **In the opposite figure :**

$MX = MY$, $m(\angle B) = 50°$

, then $m(\angle A) = \dots\dots\dots\dots$

(a) 50°   (b) 60°   (c) 70°   (d) 80°



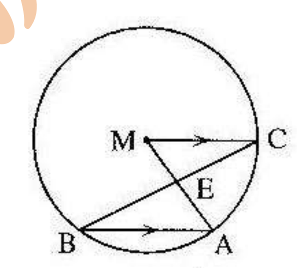
---

2 [a] **In the opposite figure :**

$\overline{AB}$ is a chord in the circle M

, $\overline{CM} // \overline{AB}$, $\overline{BC} \cap \overline{AM} = \{E\}$

Prove that : $BE > AE$



[b] **In the opposite figure :**

$\overline{AB}$ and $\overline{BC}$ are two chords in the circle M

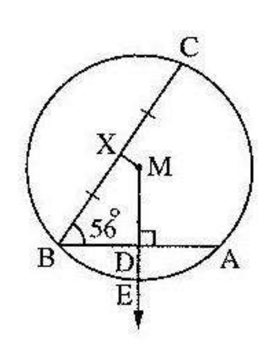
, its radius of length 5 cm. , $\overrightarrow{MD} \perp \overline{AB}$ and cuts $\overline{AB}$

at D and cuts the circle at E , X is midpoint of $\overline{BC}$

, $AB = 8$ cm. and $m(\angle ABC) = 56°$



Find : (1) $m(\angle DMX)$ (2) The length of $\overline{DE}$



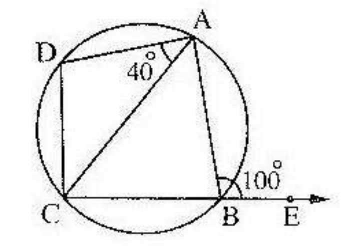
---

3 [a] **In the opposite figure :**

$m(\angle ABE) = 100°$

, $m(\angle CAD) = 40°$

Prove that : $m(\overset{\frown}{CD}) = m(\overset{\frown}{AD})$



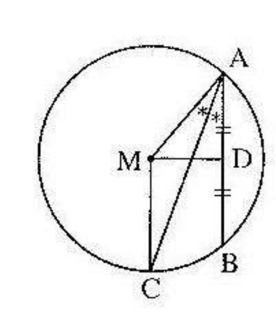
[b] **In the opposite figure :**

$\overline{AB}$ is a chord in the circle M

, $\overrightarrow{AC}$ bisects $\angle BAM$ and cuts the circle M at C

, D is midpoint of $\overline{AB}$

Prove that : $\overline{DM} \perp \overline{CM}$



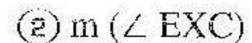
---

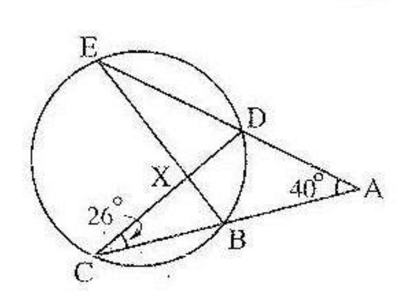
4 [a] **In the opposite figure :**

$\overrightarrow{CB} \cap \overrightarrow{ED} = \{A\}$, $m(\angle A) = 40°$

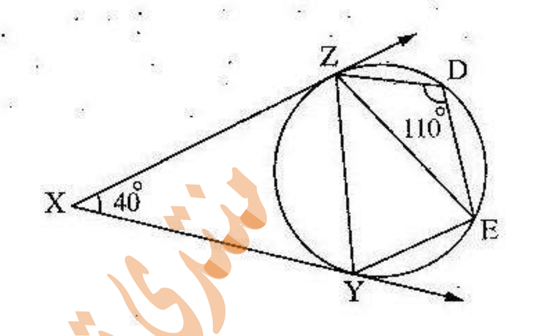
, $\overline{DC} \cap \overline{BE} = \{X\}$, $m(\angle BCD) = 26°$

Find : (1) $m(\overset{\frown}{CE})$ (2) $m(\angle EXC)$





[b] In the opposite figure :



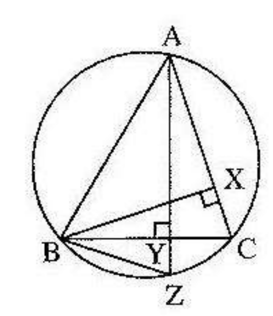
$\overrightarrow{XY}$ and $\overrightarrow{XZ}$ are two tangents to the circle from the point X , m (∠ X) = 40°

, m (∠ D) = 110°

Prove that : m $(\overset{\frown}{ZDE})$ = m $(\overset{\frown}{ZY})$

---

5 **[a] In the opposite figure :**



ABC is a triangle drawn in a circle

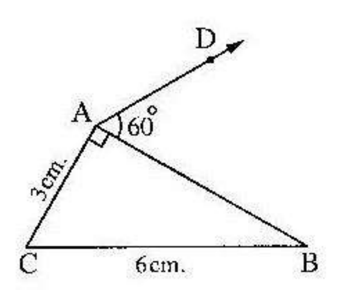
, $\overline{BX} \perp \overline{AC}$, $\overrightarrow{AY} \perp \overline{BC}$ cuts it at Y and cuts the circle at Z

Prove that :

(1) ABYX is a cyclic quadrilateral.

(2) $\overrightarrow{BC}$ bisects ∠ XBZ

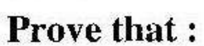
[b] In the opposite figure :



ABC is a right-angled triangle at A

, AC = 3 cm. , BC = 6 cm.

, m (∠ BAD) = 60°



Prove that :

$\overrightarrow{AD}$ is a tangent to the circle passing through the vertices of the triangle ABC

7 El-Dakahlia Governorate

Answer the following questions : *(Calculator is allowed)*



1 **[a] Choose the correct answer from the given answers :**

(1) M and N are two circles of radii lengths 9 cm. , 4 cm. , MN = 5 cm.

, then the two circles are ....

(a) intersecting. (b) touching internally.

(c) touching externally. (d) distant.

(2) The centres of all circles passing through the points A and B lie on ....

(a) $\overline{AB}$ (b) midpoint of $\overline{AB}$

(c) the symmetry axis of $\overline{AB}$ (d) the perpendicular to $\overline{AB}$ from B

(3) The measure of the inscribed angle which is drawn in a semicircle equals ....

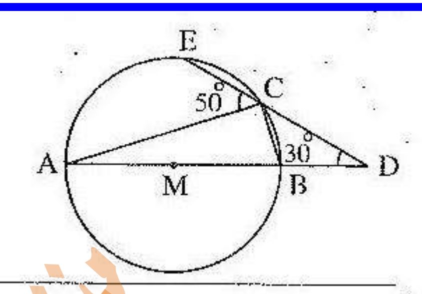
(a) 180° (b) 90° (c) 45° (d) 100°

[b] **In the opposite figure :**

$\overline{AB}$ is a diameter in the circle M

, m (∠ D) = 30° , m (∠ ACE) = 50°

Find by proof : m (∠ CBA)



2 [a] **Choose the correct answer from the given answers :**

(1) **In the opposite figure :**

$\overline{CB}$ and $\overline{CD}$ are two tangent-segments at B and D

, m (∠ C) = 70°

, then m ($\overset{\frown}{DB}$ the minor) = ...

(a) 180° (b) 90° (c) 100° (d) 110°

(2) $\overline{AB}$ and $\overline{CD}$ are two equal chords in length in the circle M , X and Y are the two midpoints of $\overline{AB}$ and $\overline{CD}$ respectively , MX = 3 cm. , then MY = ... cm.

(a) 3 (b) 6 (c) $\frac{3}{2}$ (d) 4

(3) The length of the arc which represents $\frac{1}{4}$ of the circle equals ....

(a) 4 π r (b) 2 π r (c) π r (d) $\frac{1}{2}$ π r

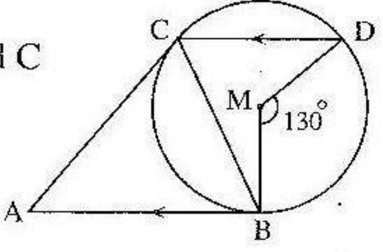
[b] **In the opposite figure :**

$\overline{AB}$ and $\overline{AC}$ are two tangent-segments to the circle M at B and C

, $\overline{AB}$ // $\overline{CD}$, m (∠ BMD) = 130°

(1) **Prove that :** $\overrightarrow{CB}$ bisects ∠ ACD

(2) **Find by proof :** m (∠ A)



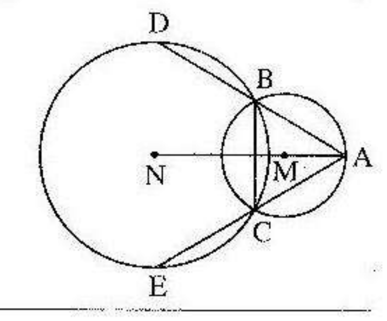
3 [a] Using the geometric tools , draw $\overline{AB}$ with length 6 cm. , then draw $\overrightarrow{AC}$ where m (∠ CAB) = 60° , draw the circle that passes through the points A , B and its centre lies on $\overrightarrow{AC}$ and calculate the length of its radius (Don't reomve the arcs).

[b] **In the opposite figure :**

M and N are two intersecting circles at B and C

, A ∈ $\overleftrightarrow{MN}$

Prove that : BD = CE



4 [a] **In the opposite figure :**

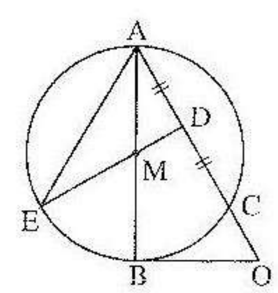
$\overline{OB}$ is a tangent-segment to the circle M at B

, $\overline{AB}$ is a diameter , D is the midpoint of $\overline{AC}$

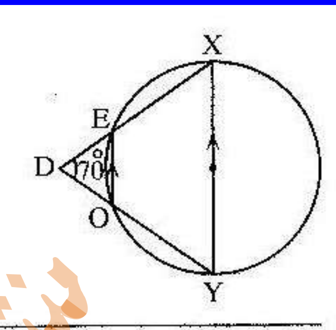
Prove that :

(1) DOBM is a cyclic quadrilateral.

(2) m (∠ AOB) = 2 m (∠ BAE)



[b] **In the opposite figure :**



$\overline{XY}$ is a diameter in the circle

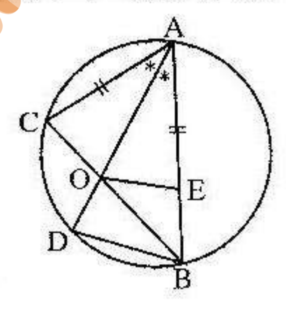
, $\overline{EO}$ is a chord in it , where $\overline{XY} // \overline{EO}$

, m (∠ D) = 70°

Find : m $(\overset{\frown}{EX})$

---

5 [a] **In the opposite figure :**



AE = AC , $\overrightarrow{AD}$ bisects ∠ BAC

Prove that : EBDO is a cyclic quadrilateral.

[b] $\overline{AB}$ is a diameter in a circle , $\overline{AC}$ is a chord in it , m (∠ CAB) = 30°

, draw $\overrightarrow{AC}$ to cut the tangent to the circle at B at D.

Prove that : $\overrightarrow{BA}$ touches the circle passing through the vertices of the triangle BCD

8 Ismailia Governorate



Answer the following questions : *(Calculator is allowed)*

1 **Choose the correct answer from those given :**

(1) A circle its radius length is 5 cm. , then its circumference = ... cm.

(a) 5 π (b) 7 π (c) 10 π (d) 25 π

(2) We can draw a circle passes through the vertices of ....

(a) rectangle. (b) rhombus. (c) trapezium. (d) parallelogram.

(3) The number of axes of symmetry of the circle = ...

(a) one axis. (b) two axes.

(c) three axes. (d) an infinite number of axes.

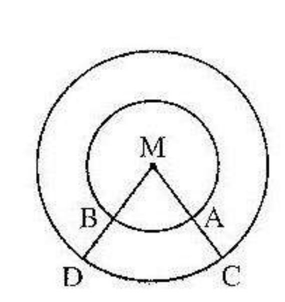
(4) M is a circle with radius length r , $\overleftrightarrow{MA}$ ⊥ straight line L where $\overleftrightarrow{MA} \cap L = \{A\}$

If MA > r , then L is ....

(a) a tangent to the circle. (b) a diameter in the circle.

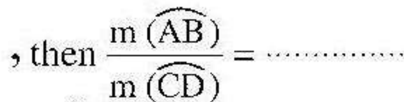
(c) outside the circle. (d) a secant to the circle.

(5) **In the opposite figure :**



Two concentric circles.

If the lengths of their radii are 2 cm. and 5 cm.



, then $\dfrac{m(\overset{\frown}{AB})}{m(\overset{\frown}{CD})}$ = ...

(a) $\frac{2}{5}$ (b) 1 (c) $\frac{2}{3}$ (d) $\frac{3}{5}$

(6) The sum of measures of the interior angles of the quadrilateral = ...

(a) 90° (b) 180° (c) 270° (d) 360°

---

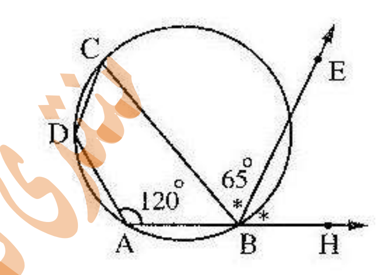
2 **[a] In the opposite figure :**

ABCD is a cyclic quadrilateral in which

m (∠ A) = 120° , $\overrightarrow{BE}$ bisects ∠ HBC

, m (∠ EBC) = 65°

Find with proof : (1) m (∠ C) (2) m (∠ D)

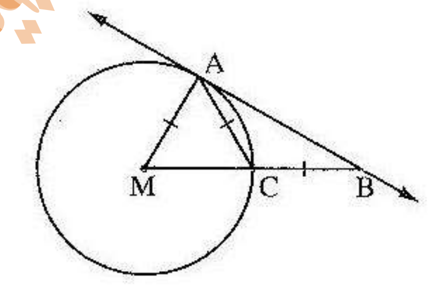


[b] In the opposite figure :

M is a circle , AM = AC = BC

Prove that :

$\overleftrightarrow{AB}$ is a tangent to the circle at A



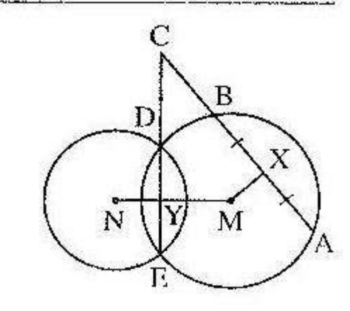
---

3 **[a] In opposite figure :**

X is the midpoint of $\overline{AB}$, $\overline{MN} \cap \overline{EC} = \{Y\}$

(1) **Prove that :** CXMY is a cyclic quadrilateral.

(2) **Find :** The centre of the circle which passes through the vertices of the figure CXMY



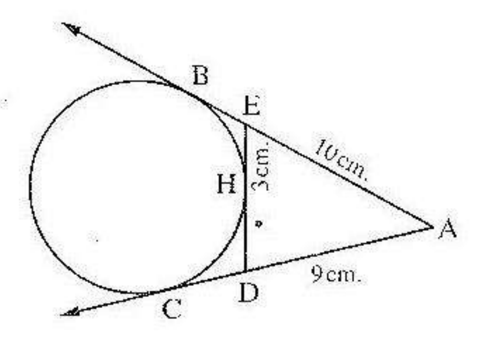
[b] In the opposite figure :

$\overrightarrow{AB}$, $\overrightarrow{AC}$ are two tangents to a circle

, $\overline{ED}$ is a tangent to the circle at H such that AE = 10 cm.

, EH = 3 cm. , AD = 9 cm.

Find : The length of $\overline{ED}$



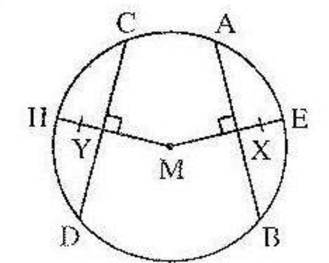
---

4 **[a] In the opposite figure :**

$\overline{ME} \perp \overline{AB}$, $\overline{MH} \perp \overline{CD}$

, EX = YH

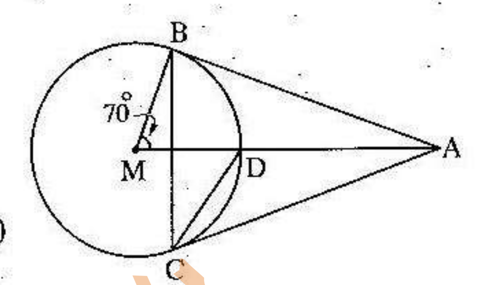
Prove that : AB = CD



[b] Using geometric tools. Draw $\overline{AB}$ its length is 6 cm. , then draw a circle passing through the two points A , B and its radius length is 3 cm.

How many circles can be drawn ?

5 **[a] In the opposite figure :**



$\overline{AB}$ and $\overline{AC}$ are two tangent-segments drawn from A

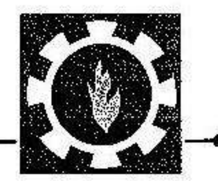
, m (∠ AMB) = 70°

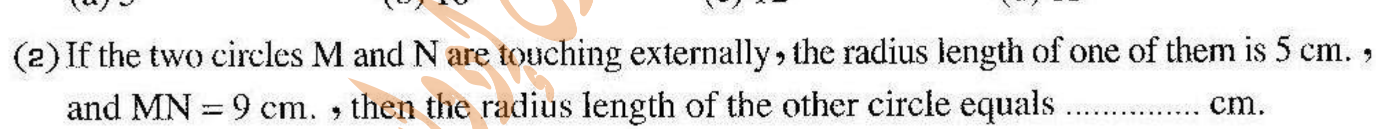
Find : (1) m (∠ ABC) (2) m (∠ ACD)

[b] $\overline{AB}$ and $\overline{CD}$ are two equal chords in length in a circle

, $\overline{AB} \cap \overline{CD} = \{E\}$, m $(\overset{\frown}{AD}) = 50°$

(1) **Prove that :** m $(\overset{\frown}{AD})$ = m $(\overset{\frown}{BC})$ (2) **Find :** m (∠ AED)



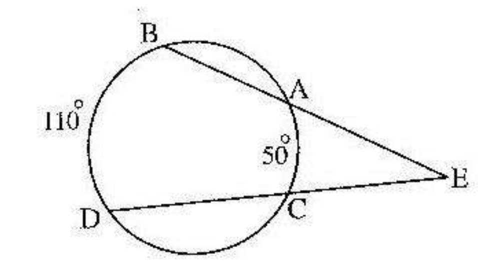


9 Suez Governorate

Answer the following questions : ***(Calculator is allowed)***

1 **Choose the correct answer from those given :**

(1) **In the opposite figure :**



$\overrightarrow{AB}$ is a tangent to the circle M

, MB = 6 cm. , AB = 8 cm.

, then AM = ... cm.

(a) 5 (b) 10 (c) 12 (d) 13

(2) If the two circles M and N are touching externally, the radius length of one of them is 5 cm. , and MN = 9 cm. , then the radius length of the other circle equals .... cm.

(a) 4 (b) 5 (c) 9 (d) 14

(3) **In the opposite figure :**

B
A
110°
50°
E
D
C

If m $(\overset{\frown}{AC}) = 50°$, m $(\overset{\frown}{BD}) = 110°$

, then m (∠ E) = ...°

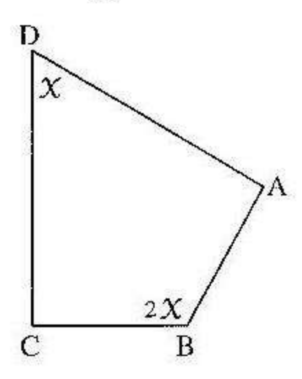
(a) 60 (b) 50

(c) 40 (d) 30

(4) A circle can be drawn passing the vertices of a ....

(a) rhombus. (b) rectangle. (c) trapezoid. (d) parallelogram.

(5) **In the opposite figure :**



ABCD is a cyclic quadrilateral , m (∠ D) = $X°$, (∠ B) = 2 $X°$

, then X = ...

(a) 120° (b) 100°

(c) 60° (d) 50°

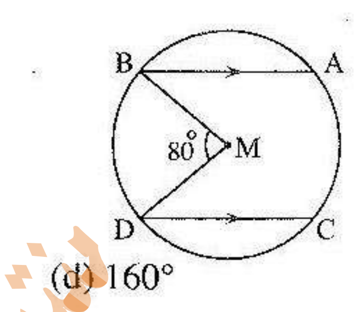
(6) **In the opposite figure :**

In a circle M , $\overline{AB}$ // $\overline{CD}$

, m (∠ BMD) = 80°

, then m ($\overset{\frown}{AC}$) = ...

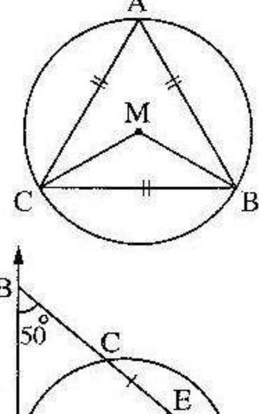
(a) 20° (b) 40° (c) 80° (d) 160°



2 [a] **In the opposite figure :**

ABC is an equilateral triangle drawn inside a circle M

Find : (1) m (∠ BAC) (2) m (∠ BMC)



[b] **In the opposite figure :**

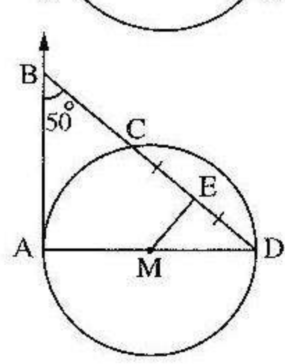
$\overline{AD}$ is a diameter of the circle M

, $\overrightarrow{AB}$ is a tangent touches it at A

, m (∠ ABC) = 50°

, E is the midpoint of $\overline{DC}$

Find with proof : m (∠ AME)

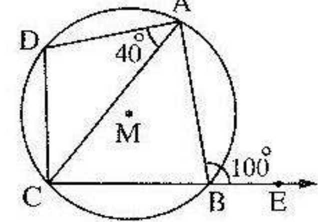


3 [a] **In the opposite figure :**

m (∠ ABE) = 100°

, m (∠ CAD) = 40°

Prove that : ADC is an isosceles triangle.

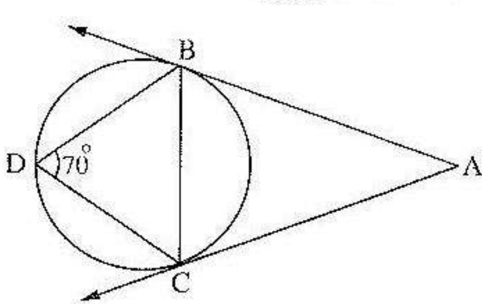


[b] **In the opposite figure :**

$\overrightarrow{AB}$, $\overrightarrow{AC}$ are two tangents to the circle at B , C

, m (∠ D) = 70°

Find : (1) m (∠ ABC) (2) m (∠ A)

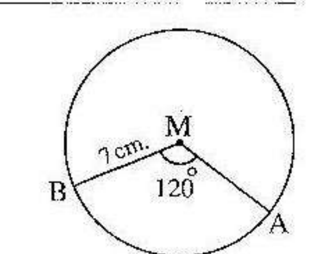


4 [a] **In the opposite figure :**

M is a circle with radius length 7 cm.

, m (∠ AMB) = 120°

Find : The length of ($\overset{\frown}{AB}$) $\left(\pi = \frac{22}{7}\right)$



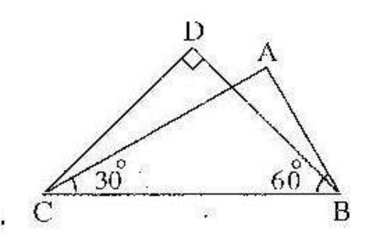
[b] **In the opposite figure :**

m (∠ BDC) = 90° , m (∠ ACB) = 30°

, m (∠ ABC) = 60°

Prove that :

The points A , B , C and D have one circle passing through them.



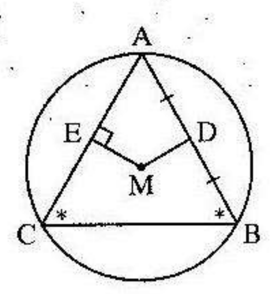
5 **[a] In the opposite figure :**

Triangle ABC is inscribed in the circle M , in which

m (∠ B) = m (∠ C) , D is the midpoint of $\overline{AB}$

, $\overline{ME} \perp \overline{AC}$

Prove that : MD = ME

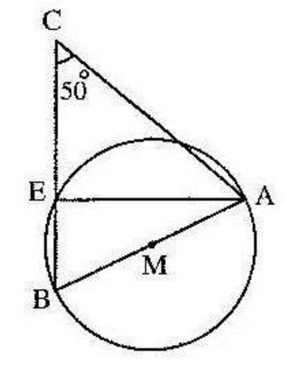


[b] In the opposite figure :

$\overline{AB}$ is a diameter of the circle M

, m (∠ C) = 50°

Find with proof : m (∠ CAE)



10 Port Said Governorate

Answer the following questions :

1 **Choose the correct answer from those given :**

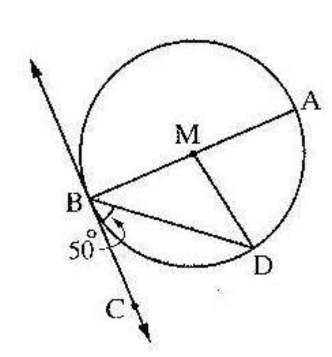
(1) **In the opposite figure :**

If m (∠ CBD) = 50°

, then m (∠ AMD) = ...

(a) 40° (b) 50°

(c) 80° (d) 100°



(2) A circle with diameter length (2 X + 5) cm. , the straight line L is distant from its centre by (X + 2) cm. where $X > 0$, then the straight line is ....

(a) a secant to the circle at two points. (b) lying outside the circle.

(c) a tangent to the circle. (d) an axis of symmetry to the circle.

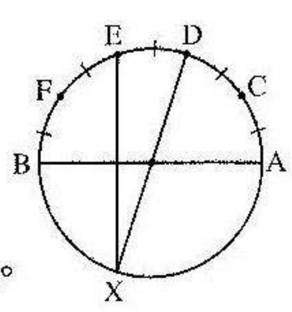
(3) **In the opposite figure :**

If $\overline{AB}$ is a diameter in circle

, m ($\overset{\frown}{AC}$) = m ($\overset{\frown}{CD}$) = m ($\overset{\frown}{DE}$) = m ($\overset{\frown}{EF}$) = m ($\overset{\frown}{FB}$)

, then m (∠ DXE) = ...

(a) 72° (b) 54° (c) 36° (d) 18°



(4) M and N are two intersecting circles their radii lengths are 5 cm. , 2 cm. , then MN ∈ ....

(a) [3 , 7[(b)]3 , 7[(c)]3 , 7] (d) [3 , 7]

(5) **In the opposite figure :**

If m (∠ BAD) = 120°

, then m (∠ CBD) = ...

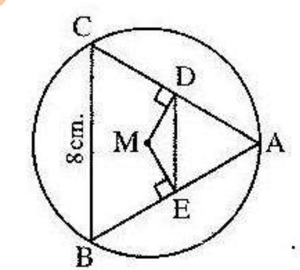
(a) 15° (b) 30° (c) 45° (d) 60°

(6) The number of all common tangents drawn to two distant circles equals ....

(a) 4 (b) 3 (c) 2 (d) 1

---

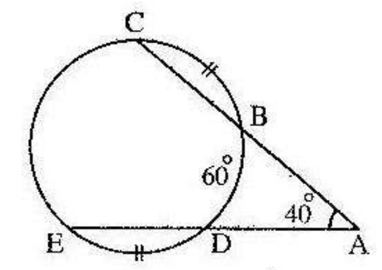
2 [a] **Using the given data in the opposite figure :**



(1) **Prove that :** $\overline{DE}$ // $\overline{CB}$

(2) **Find :** DE

[b] **In the opposite figure :**



m (∠ A) = 40° , m $(\overset{\frown}{BD})$ = 60°

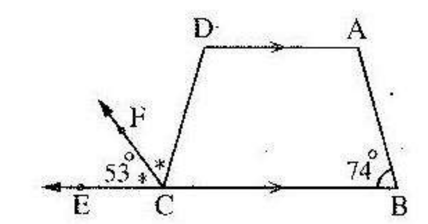
and m $(\overset{\frown}{BC})$ = m $(\overset{\frown}{DE})$

Find with proof :

m $(\overset{\frown}{EC})$ and m $(\overset{\frown}{BC})$

---

3 [a] **Using the given data in the opposite figure :**



Prove that :

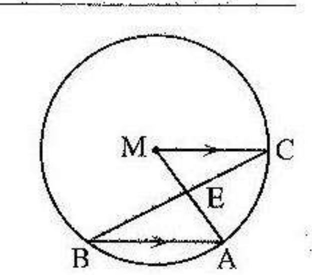
ABCD is a cyclic quadrilateral.

[b] ABCD a parallelogram in which AC = BC

Prove that : $\overleftrightarrow{CD}$ is a tangent to the circumcircle of the triangle ABC

---

4 [a] **In the opposite figure :**

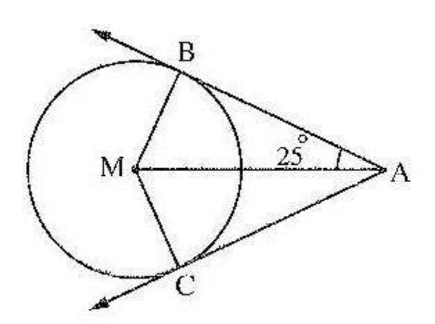


$\overline{AB}$ is a chord in the circle M

, $\overline{CM}$ // $\overline{AB}$, $\overline{BC}$ ∩ $\overline{AM}$ = {E}

Prove that : BE > AE

[b] **In the opposite figure :**



$\overrightarrow{AB}$ and $\overrightarrow{AC}$ are two tangents to the circle M

touch it at B and C respectively and m (∠ BAM) = 25°

(1) **Prove that :** $\overrightarrow{MA}$ bisects (∠ BMC)

(2) **Find :** m (∠ BMC)

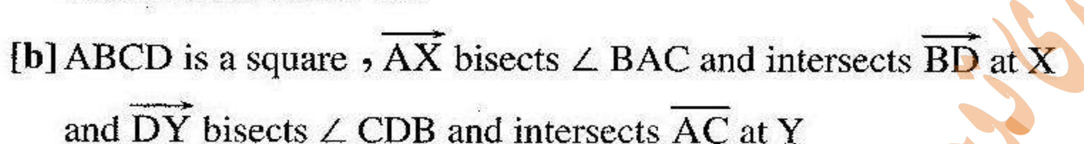
5 **[a] In the opposite figure :**

The two circles M and N intersect at A and B

, $\overline{CD}$ is a chord in the circle M cuts $\overleftrightarrow{MN}$ at E

, if E is the midpoint of $\overline{CD}$

Prove that : $\overline{AB} // \overline{CD}$



[b] ABCD is a square , $\overrightarrow{AX}$ bisects $\angle$ BAC and intersects $\overrightarrow{BD}$ at X

and $\overrightarrow{DY}$ bisects $\angle$ CDB and intersects $\overline{AC}$ at Y

Prove that : AXYD is a cyclic quadrilateral.

11 Damietta Governorate



Answer the following questions : ***(Calculator is allowed)***

1 **Choose the correct answer from the given ones :**

(1) ABC is a triangle having one symmetric line and its side lengths are 10 , 5 and x cm. , then x = ... cm.

(a) 5 (b) 8 (c) 10 (d) 12

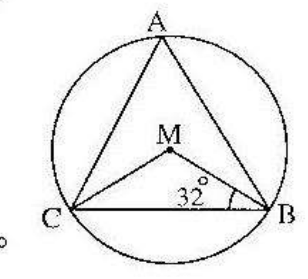
(2) If the two circles M , N are touching internally , the length of one radius of them is 3 cm. , MN = 8 cm. , then the length of the radius of the other circle is .... cm.

(a) 5 (b) 11 (c) 6 (d) 12

(3) If the ratio between the measures of the angles of a triangle is 2 : 3 : 4 , then the measure of the greatest angle is ....

(a) 40° (b) 90° (c) 45° (d) 80°

(4) **In the opposite figure :**



M is a circle , m ($\angle$ MBC) = 32°

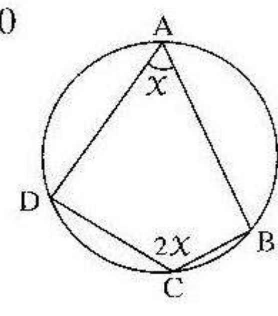
, then m ($\overset{\frown}{BC}$ the minor) = ...

(a) 116° (b) 23° (c) 58° (d) 64°

(5) A rectangular picture its length is 60 cm. and its width is 40 cm. We need to make a wooden frame its width is 5 cm. , then its total area is .... cm^2.

(a) 3050 (b) 3500 (c) 2925 (d) 3250

(6) **In the opposite figure :**



m ($\angle$ A) = x° , m ($\angle$ C) = 2 x°

, then x = ...

(a) 60° (b) 50° (c) 80° (d) 20°

2 [a] A , B are two points where AB = 6 cm. , draw a circle of radius length 5 cm. and passes through the two points A , B

Find : (1) The number of circles can be drawn.

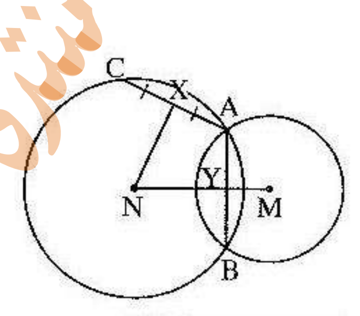
(2) The distance from the centre to $\overline{AB}$ by proof.

[b] **In the opposite figure :**

M , N are two intersecting circles at A , B , $\overleftrightarrow{MN} \cap \overline{AB} = \{Y\}$

, AB = AC , if X is the midpoint of $\overline{AC}$

Prove that : NX = NY



3 [a] $\overline{AB}$, $\overline{AC}$ are two chords in a circle

If X and Y are the two midpoints of $\overset{\frown}{AB}$, $\overset{\frown}{AC}$ respectively , $\overline{XY}$ cuts $\overline{AB}$ at D , $\overline{AC}$ at H

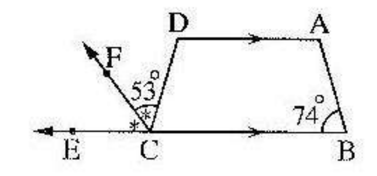
Prove that : AD = AH

[b] **In the opposite figure :**

$\overline{AD}$ // $\overline{BC}$, m (∠ B) = 74° , m (∠ DCF) = 53°

, $\overrightarrow{CF}$ bisects ∠ DCE

Prove that : ABCD is a cyclic quadrilateral.

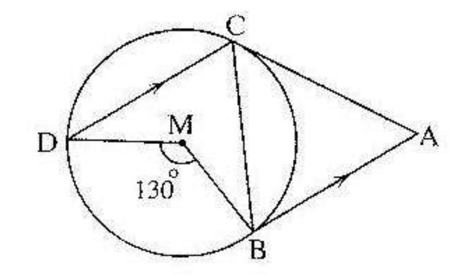


4 [a] **In the opposite figure :**

$\overline{AB}$ and $\overline{AC}$ are two tangent-segments to the circle M

, $\overline{AB}$ // $\overline{CD}$, m (∠ BMD) = 130°

Prove that : $\overrightarrow{CB}$ bisects ∠ ACD



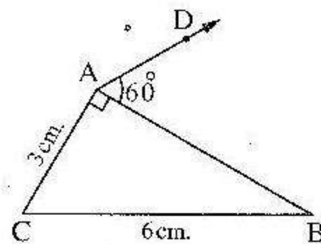
[b] **In the opposite figure :**

m (∠ BAC) = 90° , m (∠ DAB) = 60°

AC = 3 cm. , BC = 6 cm.

Prove that :

$\overrightarrow{AD}$ is a tangent to the circle passing through the vertices of the triangle ABC

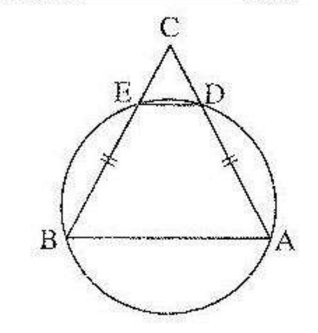


5 [a] **In the opposite figure :**

$\overline{AD}$ and $\overline{BE}$ are two equal chords in length in the circle

, $\overrightarrow{AD} \cap \overrightarrow{BE} = \{C\}$

Prove that : CD = CE



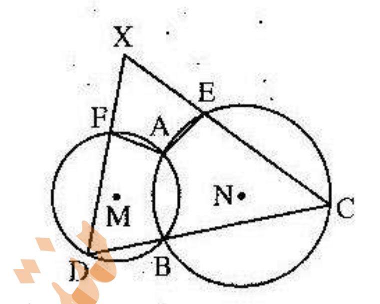
[b] In the opposite figure :

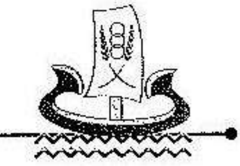
Two intersecting circles at A and B

, $\overline{CD}$ passes through the point B and intersects

the two circles at C and D

Prove that : AFXE is a cyclic quadrilateral.





12 Kafr El-Sheikh Governorate

Answer the following questions : ***(Calculator is allowed)***

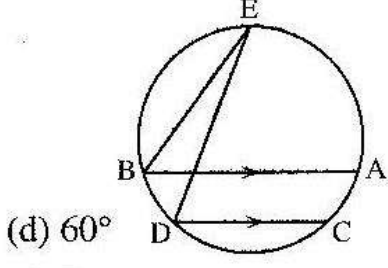
1 [a] Choose the correct answer from those given :

(1) **In the opposite figure :**

If m $(\overset{\frown}{AC}) = 30°$, $\overline{AB} \parallel \overline{CD}$

, then m (∠ BED) = ...

(a) 10° (b) 15° (c) 30° (d) 60°



(2) The two tangents drawn from the two ends of a diameter of a circle are ....

(a) parallel. (b) equal in length. (c) congruent. (d) intersecting.

(3) M and N are two intersecting circles their radii lengths are 5 cm. , 2 cm.

, then MN ∈ ....

(a)]3 , 7[(b) [3 , 7[(c)]3 , 7] (d) [3 , 7]

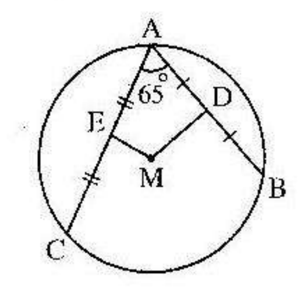
[b] In the opposite figure :

$\overline{AB}$, $\overline{AC}$ are two chords in the circle M ,

D , E are the two midpoints of $\overline{AB}$, $\overline{AC}$ respectively

and m (∠ BAC) = 65°

Find : m (∠ DME)



---

2 [a] Choose the correct answer from those given :

(1) **In the opposite figure :**

$\overrightarrow{AB}$ is a tangent to the circle M

, if MB = 5 cm. , AC = 8 cm. , then AB = ... cm.

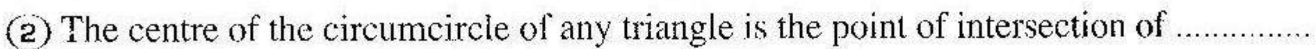
(a) 5 (b) 10 (c) 12 (d) 13

B
5 cm.
A
8 cm.
C
M

(2) The centre of the circumcircle of any triangle is the point of intersection of ....

(a) the interior bisectors of its angles. (b) the exterior bisectors of its angles.

(c) its heights. (d) the symmetric axes of its sides.



(3) The measure of the arc which represents $\frac{1}{3}$ the measure of the circle equals ....

(a) 60° (b) 90° (c) 120° (d) 240°

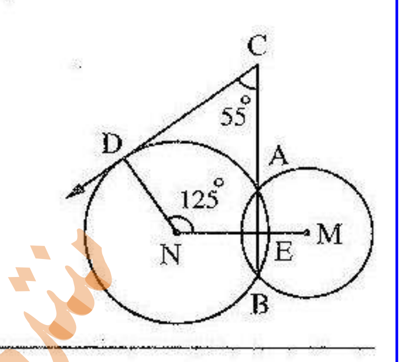
[b] In the opposite figure :

M and N are two intersecting circles at A and B

, $C \in \overrightarrow{BA}$, D ∈ the circle N

, m (∠ MND) = 125° and m (∠ BCD) = 55°

Prove that : $\overleftrightarrow{CD}$ is a tangent to the circle N at D



3 [a] State three cases of the cyclic quadrilateral.

[b] ABCD is a quadrilateral in which AB = AD , m (∠ ABD) = 30° and m (∠ C) = 60°

Prove that : ABCD is a cyclic quadrilateral.

4 [a] **Prove that :** The two tangent-segments drawn to a circle from a point outside it are equal in length.

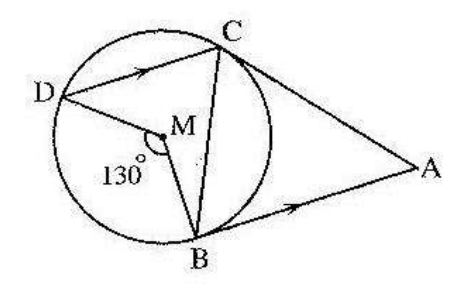
[b] In the opposite figure :

$\overline{AB}$ and $\overline{AC}$ are two tangent-segments to the circle M

, $\overline{AB}$ // $\overline{CD}$, m (∠ BMD) = 130°

(1) **Prove that :** $\overrightarrow{CB}$ bisects ∠ ACD

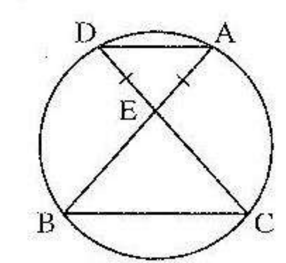
(2) **Find :** m (∠ A) with proof.



5 [a] **In the opposite figure :**

$\overline{AB} \cap \overline{CD} = \{E\}$, EA = ED

Prove that : EB = EC



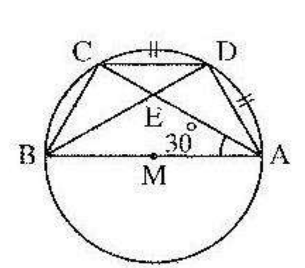
[b] In the opposite figure :

$\overline{AB}$ is a diameter of a circle M , C ∈ the circle

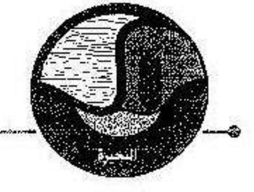
, m (∠ CAB) = 30° , D is the midpoint of $\overset{\frown}{AC}$, $\overline{DB} \cap \overline{AC} = \{E\}$

(1) **Find :** m (∠ BDC) , m (∠ ABD) with proof.

(2) **Prove that :** Δ ABE is an isosceles triangle.



13 El-Beheira Governorate



Answer the following questions : *(Calculators are permitted)*

1 Choose the correct answer from those given :

(1) The distance between the two points (6 , 0) , (– 4 , 0) equals .... length units.

(a) – 10 (b) 10 (c) 2 (d) 24

(2) If the length of a diameter of a circle is 7 cm. , and the straight line L at a distance of 3.5 cm. from its centre , then L is ....

(a) a secant to the circle at two points. (b) lying outside the circle.
(c) a tangent to the circle. (d) an axis of symmetry to the circle.

(3) If $\overline{AB}$ is a diameter of a circle , where A (3 , – 5) , B (5 , 1) , then the centre of the circle is ....

(a) (4 , – 2) (b) (4 , 2) (c) (2 , 2) (d) (8 , – 2)

(4) The inscribed angle which is opposite to the minor arc in a circle is ....

(a) reflex. (b) right. (c) obtuse. (d) acute.

(5) It is possible to draw a circle passing through the vertices of a ....

(a) trapezium. (b) rhombus. (c) parallelogram. (d) rectangle.

(6) The number of tangents can be drawn from a point lies on a circle equals ....

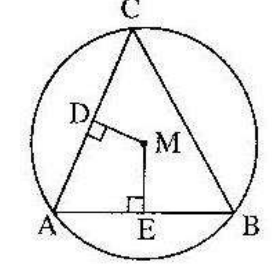
(a) one. (b) two. (c) four. (d) infinite number.

---

2 [a] **In the opposite figure :**

ABC is a triangle drawn inside a circle of centre M
, $\overline{MD} \perp \overline{AC}$, $\overline{ME} \perp \overline{AB}$
, BC = 8 cm.

(1) **Prove that :** $\overline{DE}$ // $\overline{CB}$ (2) **Find :** DE



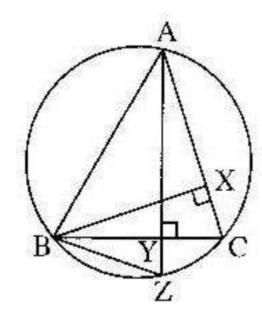
[b] **In the opposite figure :**

ABC is a triangle drawn inside a circle , $\overline{BX} \perp \overline{AC}$
$\overrightarrow{AY} \perp \overline{BC}$ cuts it at Y and cuts the circle at Z

Prove that :

(1) ABYX is a cyclie quadrilateral.

(2) $\overline{BC}$ bisects ∠ XBZ

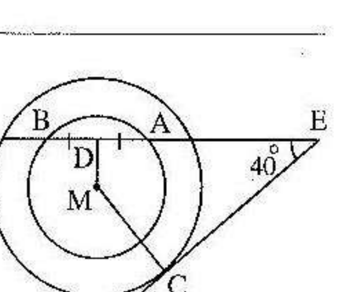


---

3 [a] **In the opposite figure :**

Two concentric circles of centre M
, $\overrightarrow{EC}$ is a tangent to the greater circle
, $\overline{EB}$ cuts the smaller circle at A , B
, D is the midpoint of $\overline{AB}$ and m (∠ CED) = 40°

Find with proof : m (∠ DMC)



[b] $\overline{AB}$, $\overline{CD}$ are two parallel chords in a circle M , E is the midpoint of $\overline{AB}$,
$\overleftrightarrow{EM}$ is drawn to cut $\overline{CD}$ at F **Prove that :** FC = FD

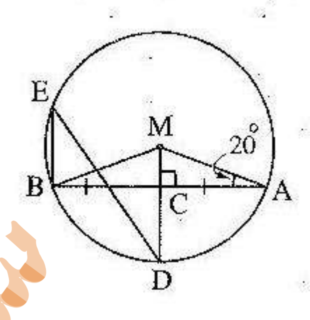
4 [a] **In the opposite figure :**

$\overrightarrow{MC} \cap \overline{AB} = \{C\}$, $\overrightarrow{MC} \perp \overline{AB}$

, $\overrightarrow{MC}$ intersects the circle at D

, m (∠ MAB) = 20°

Find : (1) m $(\overset{\frown}{AD})$ (2) m (∠ DEB)



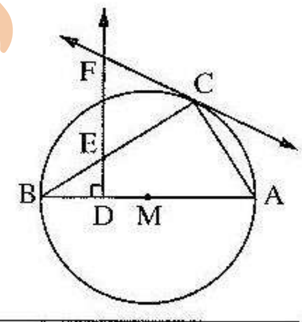
[b] **In the opposite figure :**

$\overline{AB}$ is a diameter of a circle M

, $\overleftrightarrow{CF}$ is a tangent of the circle at C and $\overrightarrow{DE} \perp \overline{AB}$

Prove that : (1) ADEC is a cyclic quadrilateral.

(2) FE = FC



---

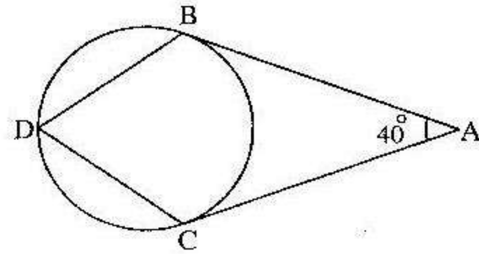
5 [a] Find the measure of the arc which represents $\frac{1}{3}$ its circle , then calculate the length of this arc if the length of the radius is 7 cm. $\left(\pi = \frac{22}{7}\right)$

[b] **In the opposite figure :**

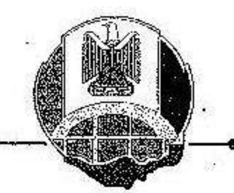
$\overline{AB}$, $\overline{AC}$ are two tangents to the circle at B , C

and m (∠ A) = 40°

Find with proof : m (∠ D)



14 El-Fayoum Governorate



Answer the following questions : (Calculator is allowed)

1 **Choose the correct answer from those given :**

(1) If the straight line L is a tangent to the circle of diameter 8 cm. , then the distance between L and the centre equals .... cm.

(a) 3 (b) 4 (c) 6 (d) 8

(2) The angle whose measure is 50° complements an angle of measure ....

(a) 90° (b) 130° (c) 50° (d) 40°

(3) The inscribed angle which is opposite to the minor arc in a circle is ....

(a) reflex. (b) obtuse. (c) right. (d) acute.

(4) ABC is a triangle in which AB = AC , m (∠ C) = 40° , then m (∠ A) = ...

(a) 40° (b) 80° (c) 100° (d) 120°

(5) The number of the symmetry axes of square is ....

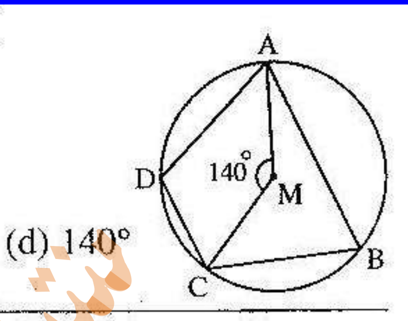
(a) 1 (b) 2 (c) 3 (d) 4

(6) **In the opposite figure :**

In the circle M , if m (∠ AMC) = 140°

, then m (∠ ADC) = ...

(a) 40° (b) 70° (c) 110° (d) 140°



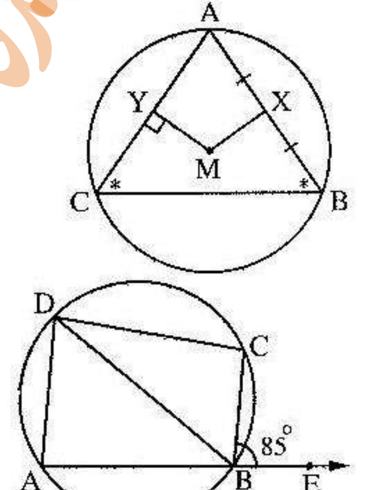
2 [a] **In the opposite figure :**

Triangle ABC is inscribed in circle M , in which :

m (∠ B) = m (∠ C) , X is the midpoint of $\overline{AB}$

, $\overline{MY} \perp \overline{AC}$

Prove that : MX = MY

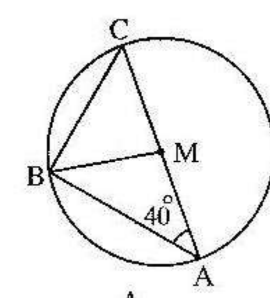


[b] **In the opposite figure :**

E ∈ $\overrightarrow{AB}$, E ∉ $\overline{AB}$, m ($\overset{\frown}{AB}$) = 110°

, m (∠ CBE) = 85°

Find : m (∠ BDC)

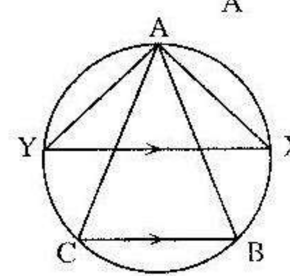


3 [a] **In the opposite figure :**

$\overline{AC}$ is a diameter in a circle M , B ∈ the circle M

, m (∠ BAC) = 40°

Find : m (∠ CBM)

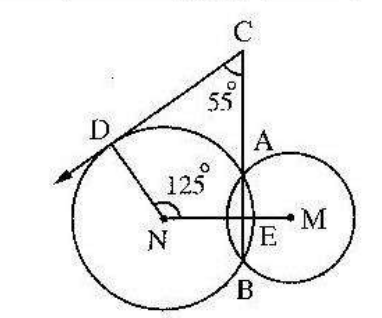


[b] **In the opposite figure :**

ABC is an inscribed triangle inside a circle

, $\overline{XY}$ // $\overline{BC}$

Prove that : m (∠ XAC) = m (∠ BAY) .



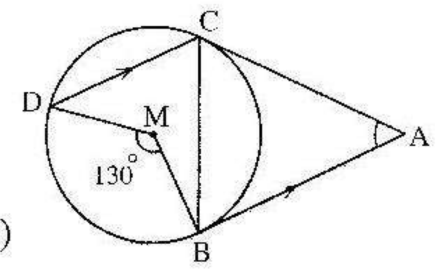
4 [a] **In the opposite figure :**

M and N are two intersecting circles at A and B , C ∈ $\overrightarrow{BA}$

, D ∈ the circle N and m (∠ MND) = 125°

, m (∠ BCD) = 55°

Prove that : $\overleftrightarrow{CD}$ is a tangent to circle N at D



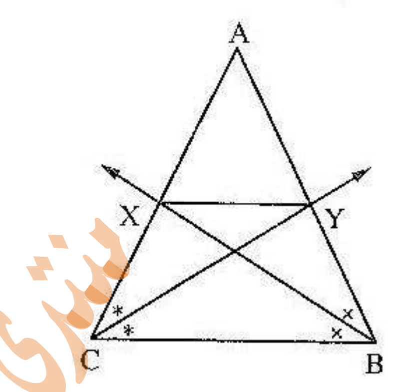
[b] **In the opposite figure :**

$\overline{AB}$ and $\overline{AC}$ are two tangent-segments to the circle M

, $\overline{AB}$ // $\overline{CD}$, m (∠ BMD) = 130°

(1) **Prove that :** $\overrightarrow{CB}$ bisects ∠ ACD (2) **Find :** m (∠ A)

5 [a] **In the opposite figure :**



ABC is a triangle in which AB = AC

, $\overrightarrow{BX}$ bisects ∠ B and intersect $\overline{AC}$ at X

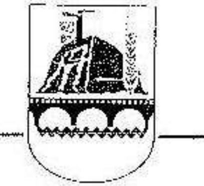
, $\overrightarrow{CY}$ bisects ∠ C and intersect $\overline{AB}$ at Y

Prove that : BCXY is a cyclic quadrilateral

and prove that : $\overline{XY}$ // $\overline{BC}$

[b] ABC is a triangle inscribed in a circle , $\overleftrightarrow{AD}$ is a tangent to the circle at A , X ∈ $\overline{AB}$, Y ∈ $\overline{AC}$ where $\overline{XY}$ // $\overline{BC}$ **Prove that :** $\overleftrightarrow{AD}$ is a tangent to the circle passing through the points A , X and Y

15 Beni Suef Governorate



Answer the following questions : ***(Calculator is allowed)***

1 **Choose the correct answer from those given :**

(1) It is impossible to draw a circle passing through the vertices of ....

(a) a triangle. (b) a square. (c) a rhombus. (d) a rectangle.

(2) If m_1 and m_2 are the slopes of two perpendicular straight lines , then ....

(a) $m_1 + m_2 = 0$ (b) $m_1 - m_2 = -1$ (c) $m_1 = m_2$ (d) $m_1 \times m_2 = -1$

(3) M and N are two circles touching internally , their radii lengths are 3 cm. , and 5 cm. , then MN = ... cm.

(a) 2 (b) 3 (c) 5 (d) 8

(4) The point of concurrence of the medians of the triangle divides each median in the ratio .... from its base.

(a) 2 : 1 (b) 1 : 2 (c) 2 : 3 (d) 1 : 3

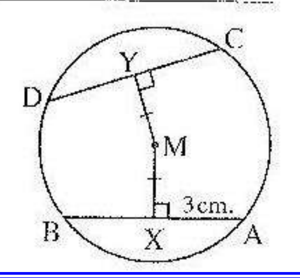
(5) The measure of the arc which represents $\frac{1}{3}$ the measure of the circle equals ....

(a) 60° (b) 90° (c) 120° (d) 240°

(6) The area of the rhombus whose diagonal lengths are 8 cm. and 10 cm. equals .... cm².

(a) 2 (b) 18 (c) 40 (d) 80

2 [a] **In the opposite figure :**



$\overline{MX} \perp \overline{AB}$, $\overline{MY} \perp \overline{CD}$, MX = MY

and AX = 3 cm.

Find : The length of $\overline{CD}$

[b] Two concentric circles M , $\overline{AB}$ is a chord in the larger circle and intersects the smaller circle at C , D , draw $\overline{ME} \perp \overline{AB}$ **Prove that :** AC = BD

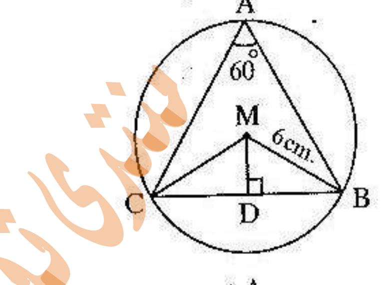
---

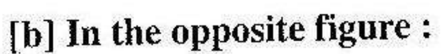
3 **[a] In the opposite figure :**

In the circle M , m (∠ A) = 60°

, $\overline{MD} \perp \overline{BC}$, MB = 6 cm.

Find with proof : The length of $\overline{MD}$



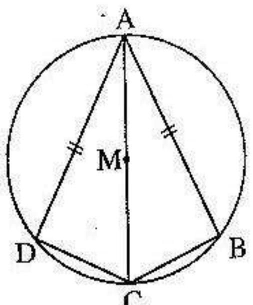


[b] In the opposite figure :

$\overline{AC}$ is a diameter in the circle M

, AB = AD

Prove that : m $(\overset{\frown}{BC})$ = m $(\overset{\frown}{CD})$



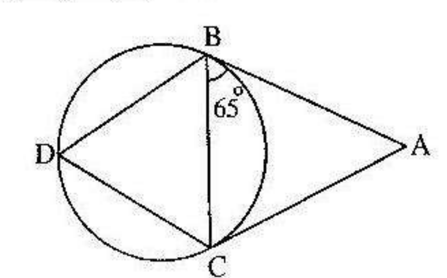
---

4 **[a] In the opposite figure :**

$\overline{AB}$ and $\overline{AC}$ are two tangent-segments to the circle at B and C

, m (∠ ABC) = 65°

Find with proof : m (∠ A) and m (∠ D)

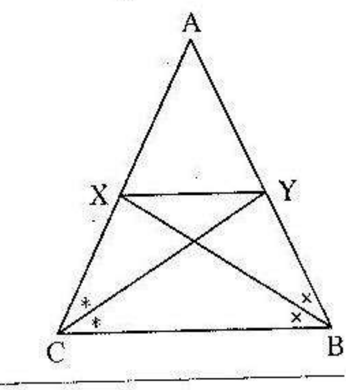


[b] In the opposite figure :

ABC is a triangle in which AB = AC , $\overrightarrow{BX}$ bisects ∠ B and intersects $\overline{AC}$ at X

, $\overrightarrow{CY}$ bisects ∠ C and intersects $\overline{AB}$ at Y

Prove that : The figure BCXY is a cyclic quadrilateral.



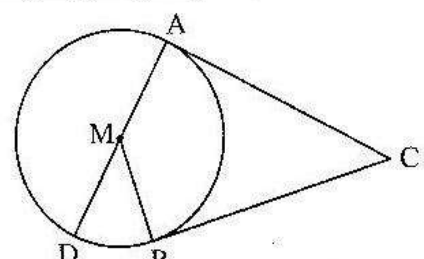
---

5 **[a] In the opposite figure :**

$\overline{AD}$ is a diameter in a circle of centre M

, $\overrightarrow{CA}$ and $\overrightarrow{CB}$ are two tangents to the circle at A , B

Prove that : m (∠ DMB) = m (∠ ACB)



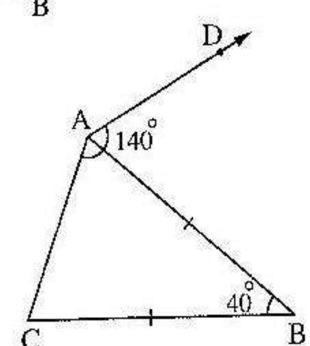
[b] In the opposite figure :

BA = BC , m (∠ DAC) = 140°

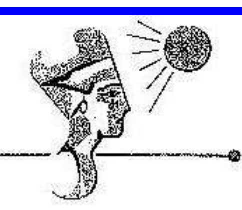
and m (∠ B) = 40°

Prove that :

$\overrightarrow{AD}$ is a tangent to the circle passing through the vertices of Δ ABC



16 El-Menia Governorate



Answer the following questions : (Calculator is allowed)

1 Choose the correct answer from those given :

(1) The two angles A and C in the right-angled triangle at B are ....

(a) complementary. (b) supplementary.

(c) adjacent. (d) vertically opposite angles.

(2) The length of the opposite to the angle of measure 30° in the right-angled triangle is .... the length of the hypotenuse.

(a) $\frac{1}{2}$ (b) $\frac{\sqrt{3}}{2}$ (c) $\sqrt{2}$ (d) 2

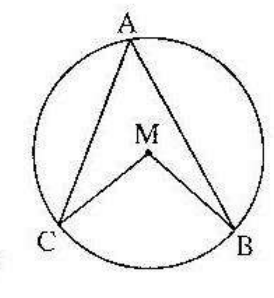
(3) The area of the rhombus whose diagonal lengths are 6 cm. , 8 cm. is .... cm^2

(a) 2 (b) 14 (c) 24 (d) 48

(4) The number of circles passing through three non-collinear points is ....

(a) 1 (b) zero (c) 2 (d) 3

(5) **In the opposite figure :**



In the circle M ,

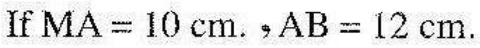
if m (∠ M) – m (∠ A) = 50°

, then m (∠ A) = ...

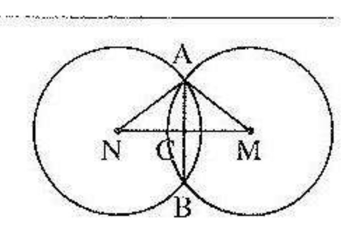
(a) 40° (b) 50° (c) 100° (d) 130°

(6) Which of the following shapes is a cyclic quadrilateral ?

(a) rhombus (b) rectangle (c) parallelogram (d) trapezium



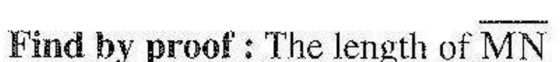
2 [a] **In the opposite figure :**



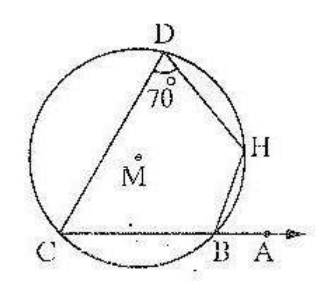
Two congruent circles M and N are intersecting at A and B

If MA = 10 cm. , AB = 12 cm.

Find by proof : The length of $\overline{MN}$



[b] **In the opposite figure :**



BCDH is a cyclic quadrilateral in the circle M

, m (∠ D) = 70° , A ∈ $\overrightarrow{CB}$, m (∠ C) = $\frac{1}{2}$ m (∠ H)

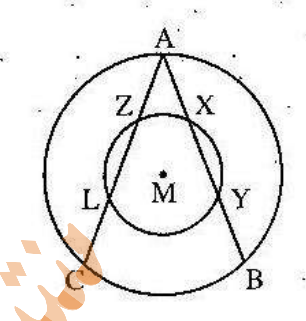
Find by proof : m (∠ ABH) , m (∠ H)

3 **[a] In the opposite figure :**

Two concentric circles at M

, AB = AC

Prove that : XY = ZL

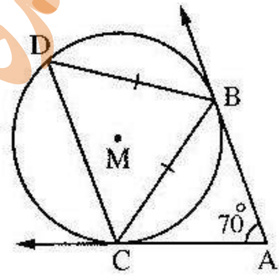


[b] In the opposite figure :

$\overrightarrow{AB}$, $\overrightarrow{AC}$ are two tangents to the circle M

, m (∠ BAC) = 70° , BC = BD

Find : m (∠ ABD)



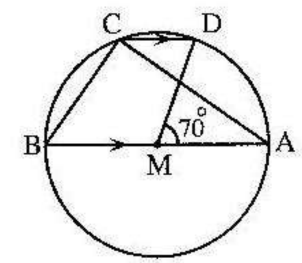
---

4 **[a] In the opposite figure :**

$\overline{AB}$ is a diameter in the circle M

, $\overline{DC}$ // $\overline{AB}$, m (∠ AMD) = 70°

Find by proof : m (∠ ACD) , m (∠ ABC)



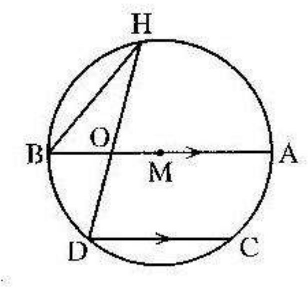
[b] In the opposite figure :

$\overline{AB}$ is a diameter in the circle M

, $\overline{AB}$ // $\overline{DC}$, m ($\overset{\frown}{DC}$) = 80°

, m ($\overset{\frown}{AH}$) = 100°

Find by proof : m (∠ DHB) , m (∠ AOH)



---

5 **In the opposite figure :**

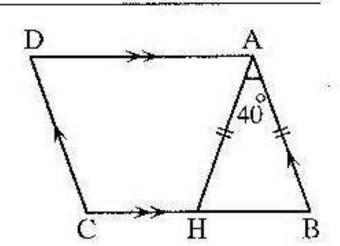
ABCD is a parallelogram

, H ∈ $\overline{BC}$ such that AB = AH , m (∠ BAH) = 40°

(1) **Find :** m (∠ AHB) , m (∠ D)

(2) **Prove that :** AHCD is a cyclic quadrilateral.

(3) **Prove that :** $\overrightarrow{AD}$ is a tangent to the circle passing through the vertices of Δ ABH



17 Assiut Governorate



Answer the following questions : *(Calculator is allowed)*

1 **Choose the correct answer :**

(1) The chord which passes through the centre of the circle is called ....

(a) tangent. (b) diameter. (c) radius. (d) side.

(2) The number of symmetry axes of a square ....

(a) 2 (b) 3 (c) 4 (d) 5

(3) The inscribed angle which is opposite to the minor arc in a circle is ....

(a) reflex. (b) right. (c) obtuse. (d) acute.

(4) **In the opposite figure :**

ABC is a triangle , AB = AC

, m (∠ B) = 50°

, then m (∠ A) = ...

(a) 100° (b) 90° (c) 80° (d) 70°

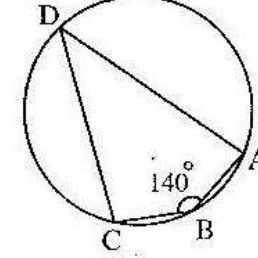
(5) A tangent to a circle of diameter length 8 cm. is at a distance of .... cm. from its centre.

(a) 4 (b) 3 (c) 8 (d) 6

(6) **In the opposite figure :**

m (∠ B) = 140°

, then m (∠ D) = ...



(a) 40° (b) 60° (c) 30° (d) 50°

---

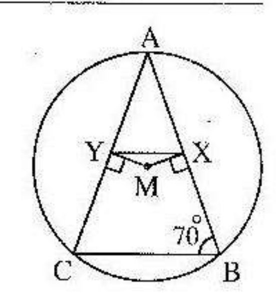
2 [a] **In the opposite figure :**

A circle M , $\overline{MX} \perp \overline{AB}$

, $\overline{MY} \perp \overline{AC}$, m (∠ B) = 70°

(1) **Prove that :** $\overline{XY}$ // $\overline{BC}$

(2) **Find with proof :** m (∠ YXM)



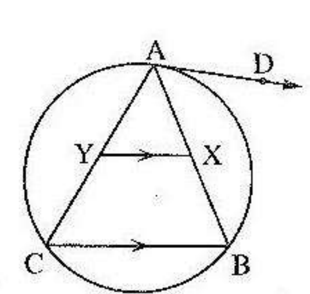
[b] **In the opposite figure :**

$\overline{XY}$ // $\overline{CB}$,

$\overrightarrow{AD}$ is a tangent to the circle at A

Prove that :

$\overrightarrow{AD}$ is a tangent to the circle passing through the points A , X and Y



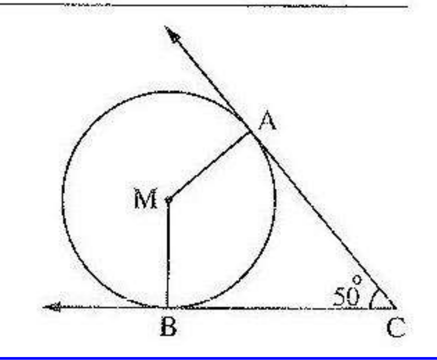
---

3 [a] **In the opposite figure :**

$\overrightarrow{CA}$, $\overrightarrow{CB}$ are two tangents to the circle M

, m (∠ C) = 50°

Find with proof : m (∠ AMB)



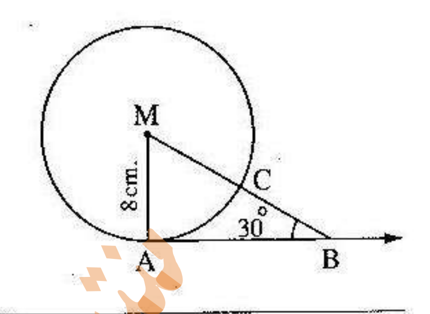
[b] In the opposite figure :

$\overrightarrow{AB}$ is a tangent to the circle M at A and MA = 8 cm.

, m (∠ ABM) = 30°

Find : (1) The length of $\overline{MB}$

(2) m $(\overset{\frown}{CA})$

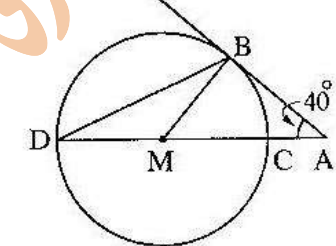


4 **[a] In the opposite figure :**

$\overrightarrow{AB}$ is a tangent to the circle at B , m (∠ A) = 40°

, $\overrightarrow{AM}$ intersects the circle M at C and D

Find with proof : m (∠ BDC)



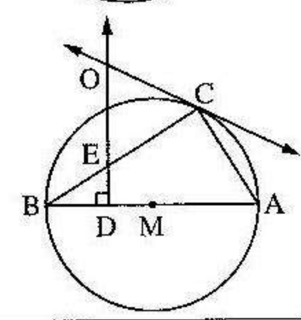
[b] In the opposite figure :

$\overline{AB}$ is a diameter in the circle M

, $\overleftrightarrow{CO}$ is a tangent to the circle at C and $\overrightarrow{DO} \perp \overline{AB}$

Prove that : (1) ADEC is a cyclic quadrilateral.

(2) OE = OC

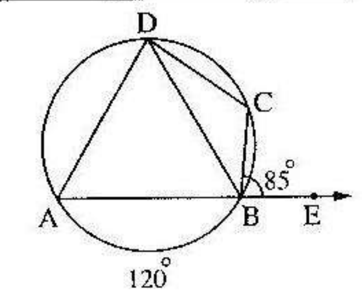


5 **[a] In the opposite figure :**

E ∈ $\overrightarrow{AB}$, E ∉ $\overline{AB}$

, m $(\overset{\frown}{AB})$ = 120° , m (∠ CBE) = 85°

Find : m (∠ BDC)



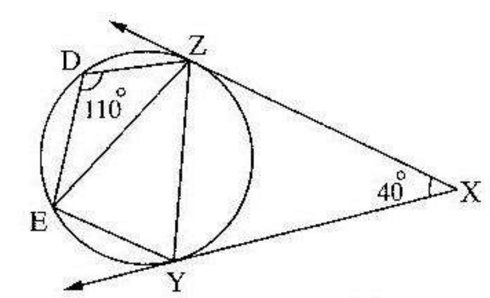
[b] In the opposite figure :

$\overrightarrow{XY}$, $\overrightarrow{XZ}$ are two tangents to the circle

from the point X , m (∠ X) = 40°

, m (∠ D) = 110°

Prove that : m $(\overset{\frown}{ZE})$ = m $(\overset{\frown}{ZY})$



18 Souhag Governorate

Answer the following questions : *(Calculator is allowed)*

1 **Choose the correct answer :**

(1) The two tangents which are drawn from the two endpoints of a diameter of a circle are ....

(a) parallel. (b) equal in length. (c) congruent. (d) intersecting.

(2) The number of the axes of symmetry in the equilateral triangle = ...

(a) 1 (b) 2 (c) 3 (d) an infinite number.

(3) M and N are two intersecting circles, their radii lengths are 5 cm., 2 cm., then MN ∈ ....

(a) [3 , 7] (b) [3 , 7[(c)]3 , 7] (d)]3 , 7[

(4) The number of common tangents of two distant circles is ....

(a) 1 (b) 2 (c) 3 (d) 4

(5) The length of side opposite to the angle of measure 30° in the right-angled triangle equals .... the length of the hypotenuse.

(a) 2 (b) $\frac{1}{2}$ (c) $\frac{1}{3}$ (d) $\frac{1}{4}$

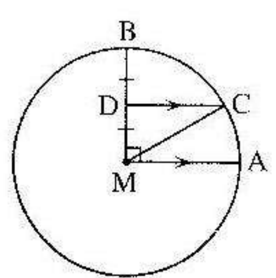
(6) **In the opposite figure :**

$\overline{AM}$ // $\overline{CD}$, MD = DB

, m (∠ AMB) = 90° , then m ($\overset{\frown}{AC}$) = ...

(a) 45° (b) 60°

(c) 30° (d) 90°



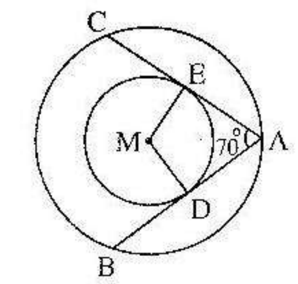
2 [a] Find the measure of the arc which represents $\frac{1}{2}$ its circle , then calculate the length of this arc if the length of the radius is 7 cm. $\left(\pi = \frac{22}{7}\right)$

[b] **In the opposite figure :**

Two concentric circle at M , $\overline{AB}$ and $\overline{AC}$ are two tangents to the smaller circle at D and E , m (∠ A) = 70°

(1) **Find :** m (∠ DME)

(2) **Prove that :** AB = AC

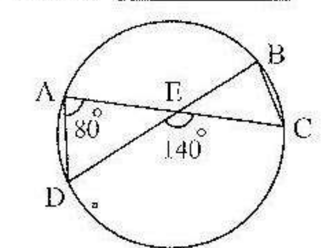


3 [a] **In the opposite figure :**

m (∠ CED) = 140°

, m (∠ A) = 80°

Find : m (∠ C)

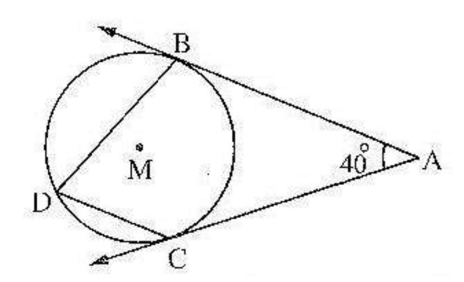


[b] **In the opposite figure :**

$\overrightarrow{AB}$ and $\overrightarrow{AC}$ are two tangents to the circle at B and C

, m (∠ A) = 40°

Find with proof : m (∠ D)

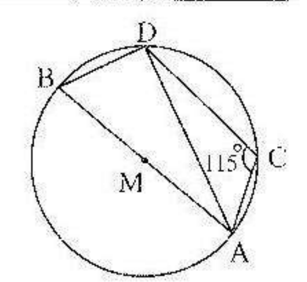


4 [a] **In the opposite figure :**

$\overline{AB}$ is a diameter of the circle M ,

m (∠ ACD) = 115°

Find with proof : m (∠ DAB)



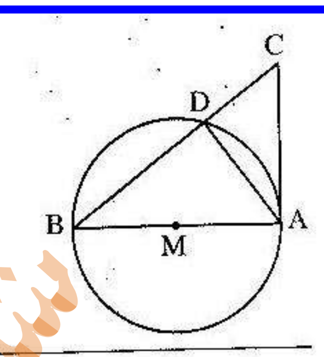
[b] In the opposite figure :

$\overline{AB}$ is a diameter of the circle M

, $\overline{AC}$ is a tangent touches it at A

, if AC = 9 cm. and BM = 6 cm.

Find : The lengths of $\overline{BC}$ and $\overline{AD}$



5 [a] State three cases of cyclic quadrilateral.

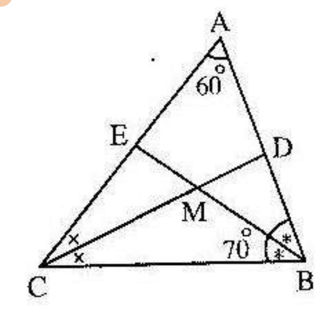
[b] In the opposite figure :

m (∠ A) = 60° , $\overrightarrow{BE}$ bisects ∠ ABC

, m (∠ B) = 70° , $\overrightarrow{CD}$ bisects ∠ ACB

(1) **Find :** m (∠ BMC)

(2) **Prove that :** ADME is a cyclic quadrilateral.



19 Qena Governorate

محافظة قنا

Answer the following questions : ***(Calculators are Permitted)***

1 **Choose the correct answer :**

(1) If the area of the circle M = 16 π cm², A is a point on its plane where MA = 8 cm.
, then A is ....

(a) outside the circle. (b) inside the circle.

(c) on the circle. (d) on the centre of the circle.

(2) A tangent to a circle of diameter length 6 cm. is at distance of .... cm. from its centre.

(a) 6 (b) 12 (c) 3 (d) 2

(3) The centre of the circumcircle of the triangle is the intersection point of its ....

(a) altitudes of triangle. (b) medians of a triangle.

(c) perpendicular bisectors of the sides of a triangle. (d) bisectors of its angles.

(4) The inscribed angle drawn in a semicircle is .... angle.

(a) acute. (b) obtuse. (c) right. (d) straight.

(5) The two tangent-segments drawn from a point outside a circle are ....

(a) equal in length. (b) not equal in length.

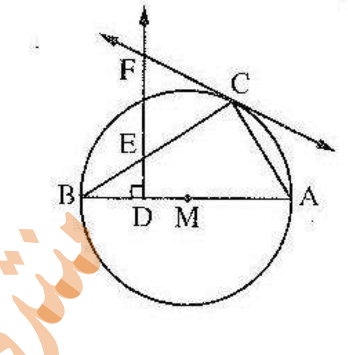
(c) perpendicular. (d) parallel.

(6) The figure is said to be cyclic quadrilateral if the measure of any exterior angle at any vertex equal to .... of the interior angle at the opposite vertex.

(a) the measure. (b) half the measure.

(c) twice the measure. (d) third the measure.

2 **[a] In the opposite figure :**



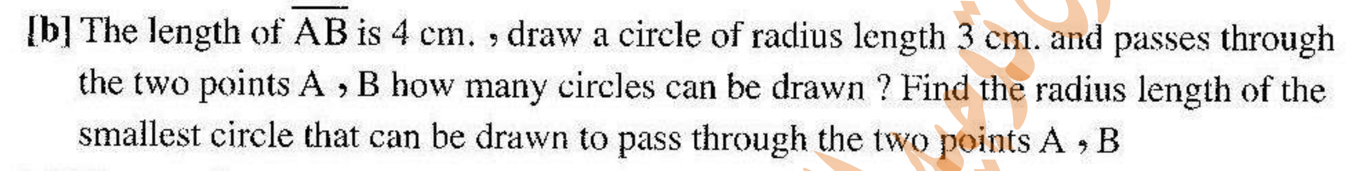
$\overline{AB}$ is a dimeter in the circle M

, $\overleftrightarrow{CF}$ is a tangent to the circle at C , $\overrightarrow{DE} \perp \overline{AB}$

Prove that :

(1) ADEC is a cyclic quadrilateral.

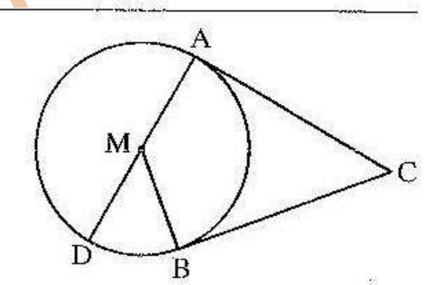
(2) FE = FC



[b] The length of $\overline{AB}$ is 4 cm. , draw a circle of radius length 3 cm. and passes through the two points A , B how many circles can be drawn ? Find the radius length of the smallest circle that can be drawn to pass through the two points A , B

---

3 **[a] In the opposite figure :**

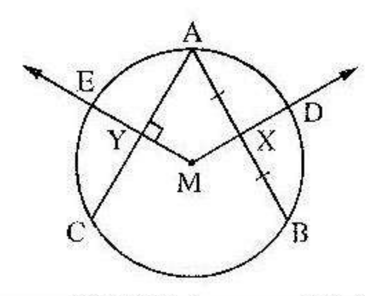


$\overline{AD}$ is a diameter in the circle M

, $\overrightarrow{CA}$ and $\overrightarrow{CB}$ are two tangents to the circle M at A and B respectively

Prove that : m (∠ DMB) = m (∠ ACB)

[b] In the opposite figure :



$\overline{AB}$ and $\overline{AC}$ are two equal chords in length in circle M

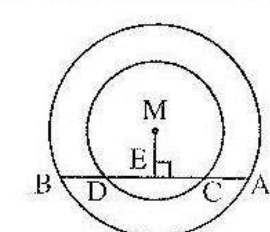
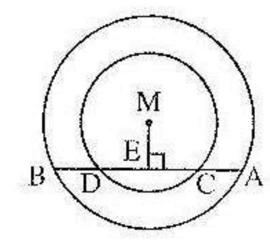
and X is the midpoint of $\overline{AB}$, $\overrightarrow{MX}$ intersects the circle at D

, $\overrightarrow{MY} \perp \overline{AC}$ intersects it at Y and intersects the circle at E

Prove that : XD = YE

---

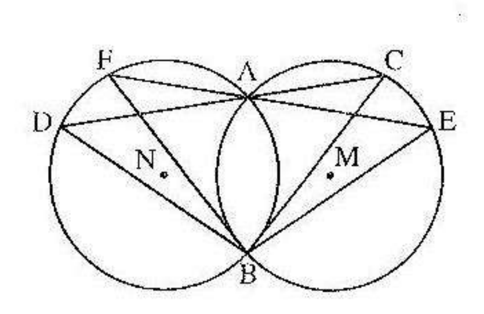
4 **[a] In the opposite figure :**

Two concentric circles M

, $\overline{AB}$ is a chord in the larger circle intersecting the smaller circle at C and D , $\overline{ME} \perp \overline{AB}$ **Prove that :** AC = BD

[b] In the opposite figure :



M and N are two intersecting circles at A and B

, $\overleftrightarrow{AC}$ intersects the circle M at C

and intersects the circle N at D ,

$\overleftrightarrow{AE}$ intersects the circle M at E

and intersects the circle N to F

Prove that : m (∠ EBC) = m (∠ FBD)

---

5 ABC is an acute-angled triangle drawn inside a circle , draw $\overrightarrow{AD} \perp \overline{BC}$ to cut $\overline{BC}$ at D and cuts the circle at E , then draw $\overline{CN} \perp \overline{AB}$ to cut $\overline{AB}$ at N

Porve that : (1) ANDC is a cyclic quadrilateral. (2) m (∠ BND) = m (∠ BED)

20 Luxor Governorate



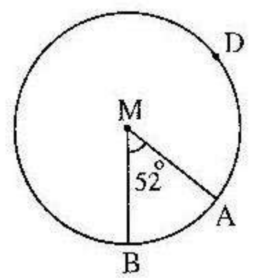
Answer the following questions :

1 Choose the correct answer :

(1) The sum of measures of the accumulative angles at a point = ... °

(a) 80 (b) 120 (c) 360 (d) 630

(2) **In the opposite figure :**



If m (∠ AMB) = 52°

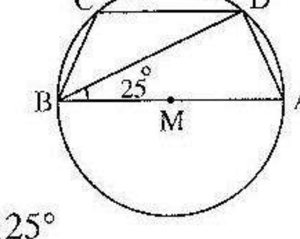
, then m $(\overset{\frown}{ADB})$ = ... °

(a) 52 (b) 104 (c) 128 (d) 308

(3) The length of side opposite to the angle of measure 30° in the right-angled triangle equals .... the hypotenuse length.

(a) $\frac{1}{2}$ (b) $\frac{1}{4}$ (c) $\frac{\sqrt{3}}{2}$ (d) 2

(4) **In the opposite figure :**



$\overline{AB}$ is a diameter in the circle M

, m (∠ ABD) = 25°

, then m (∠ C) = ...

(a) 50° (b) 100° (c) 115° (d) 125°

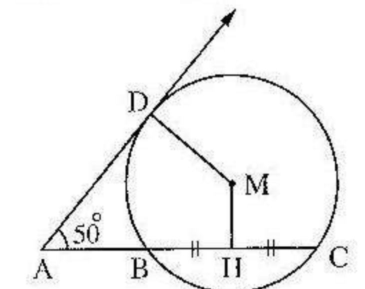
(5) The sum of lengths of any two sides of a triangle .... the length of the third side.

(a) < (b) > (c) = (d) ≤

(6) The number of circles pass by three non-collinear points = ...

(a) infinite number. (b) 3 (c) 1 (d) 0

2 [a] In the opposite figure :



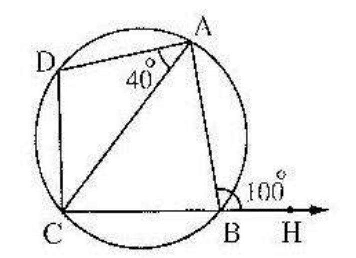
$\overrightarrow{AD}$ is a tangent to the circle at D ,

H is the midpoint of $\overline{BC}$

, m (∠ A) = 50°

Find with proof : m (∠ DMH)

[b] In the opposite figure :



m (∠ ABH) = 100°

, m (∠ DAC) = 40°

Prove that : m $(\overset{\frown}{CD})$ = m $(\overset{\frown}{AD})$

3 [a] **In the opposite figure :**

$\overline{AB}$ is a diameter in the circle M

, $\overline{AC}$ // $\overline{MD}$, m (∠ CAB) = 50°

Find : m (∠ MDB)



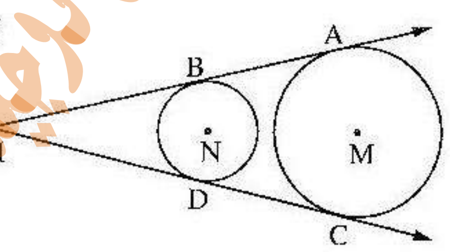
[b] **In the opposite figure :**

$\overleftrightarrow{AH}$ and $\overleftrightarrow{CH}$ are two tangents to the two circles M and N

touch the circle M at A and C

touch the circle N at B and D

Prove that : AB = CD

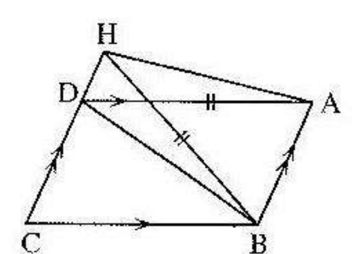


4 [a] **In the opposite figure :**

ABCD is a parallelogram H ∈ $\overrightarrow{CD}$

where BH = AD

prove that : ABDH is a cyclic quadrilateral.



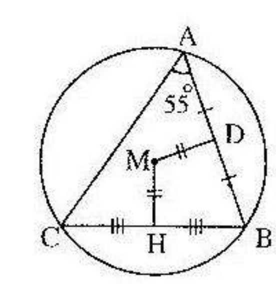
[b] **In the opposite figure :**

D is the midpoint of $\overline{AB}$

, H is the midpoint of $\overline{BC}$,

m (∠ A) = 55° , MD = MH

Find : m (∠ B)



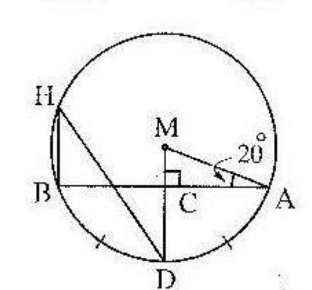
5 [a] **In the opposite figure :**

$\overrightarrow{MC}$ ⊥ $\overline{AB}$ and intersects the circle M at D

which is the midpoint of $\overset{\frown}{AB}$

, m (∠ MAB) = 20°

Find : (1) m ($\overset{\frown}{AD}$) (2) m (∠ DHB)

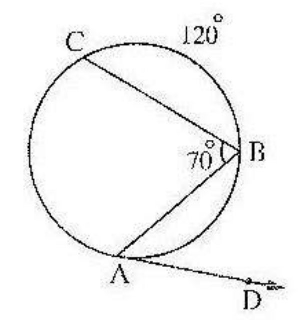


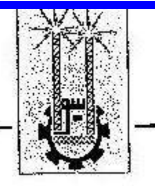
[b] **In the opposite figure :**

$\overrightarrow{AD}$ is a tangent to the circle at A

, m (∠ B) = 70° , m ($\overset{\frown}{BC}$) = 120°

Find : m (∠ BAD)

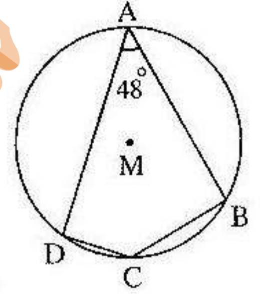




21 Aswan Governorate

Answer the following questions : (Calculator is allowed)

1 Choose the correct answer from the given ones :

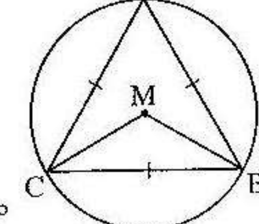


(1) **In the opposite figure :**

m (∠ A) = 48° , then

the measure of major arc $\overset{\frown}{BD}$ = ...

(a) 260° (b) 265° (c) 264° (d) 262°



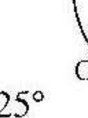
(2) **In the opposite figure :**

ABC is an equilateral triangle inscribed in circle M

, then m (∠ BMC) = ...

(a) 50° (b) 120° (c) 60° (d) 100°

(3) **In the opposite figure :**



D is the midpoint of $\overline{AB}$, H is the midpoint of $\overline{AC}$

, m (∠ A) = 55°

, then m (∠ DMH) = ...

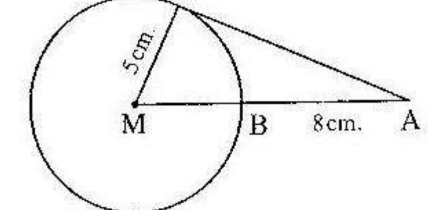
(a) 120° (b) 130° (c) 135° (d) 125°

(4) Number of axes of symmetry of the circle = ...

(a) zero (b) one (c) infinite number. (d) 4

(5) The length of side opposite to the angle of measure 30° in the right-angled triangle equals .... the length of the hypotenuse.

(a) $\frac{\sqrt{3}}{2}$ (b) $\frac{1}{2}$ (c) $\sqrt{2}$ (d) 2



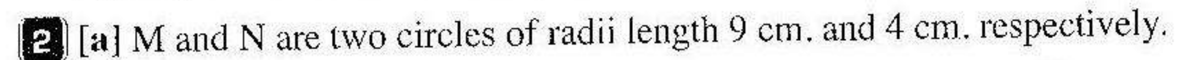
(6) **In the opposite figure :**

$\overline{AC}$ is a tangent to circle M at C

if MC = 5 cm. , AB = 8 cm.

, then AC = ... cm.

(a) 5 (b) 10 (c) 13 (d) 12



2 [a] M and N are two circles of radii length 9 cm. and 4 cm. respectively.

Show the position of each of them with respect to the other if :

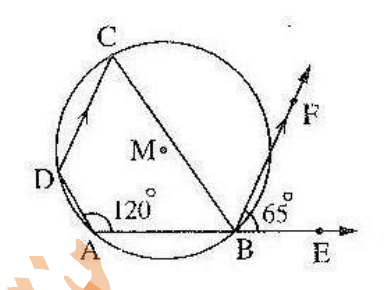
(1) MN = 5 cm. (2) MN = 10 cm.

[b] **In the opposite figure :**

ABCD is a quadrilateral inscribed in circle M

, $\overrightarrow{BF} \parallel \overline{DC}$, m (∠ EBF) = 65° , m (∠ BAD) = 120°

Find : m (∠ ADC)

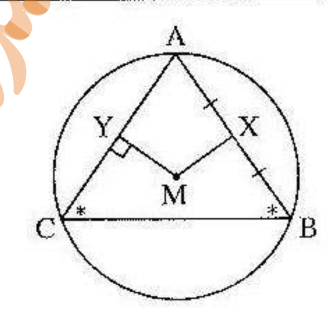


3 [a] **In the opposite figure :**

ABC is a triangle inscribed in circle M ,

m (∠ B) = m (∠ C) , X is the midpoint of $\overline{AB}$, $\overline{MY} \perp \overline{AC}$

Prove that : MX = MY

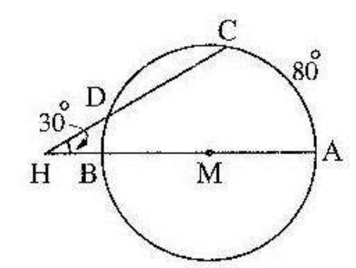


[b] **In the opposite figure :**

$\overline{AB}$ is a diameter in circle M , $\overrightarrow{AB} \cap \overrightarrow{CD} = \{H\}$,

m (∠ AHC) = 30° , m $(\overset{\frown}{AC})$ = 80°

Find : m $(\overset{\frown}{CD})$



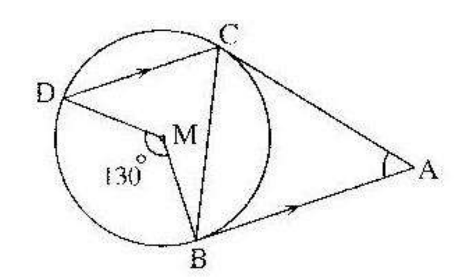
4 [a] **In the opposite figure :**

$\overline{AB}$ and $\overline{AC}$ are two tangent-segments to the circle M

at B and C , $\overline{AB} \parallel \overline{CD}$, m (∠ BMD) = 130°

(1) **Find :** m (∠ ABC)

(2) **Prove that :** $\overrightarrow{CB}$ bisects ∠ ACD

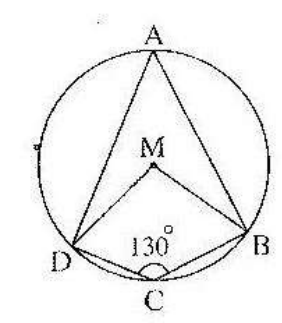


[b] **In the opposite figure :**

In the circle M ,

if m (∠ BCD) = 130°

Find : m (∠ BMD)



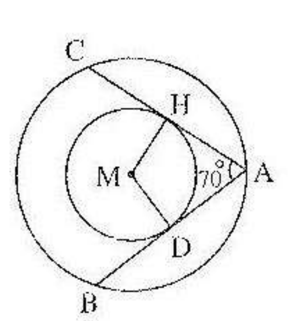
5 [a] **In the opposite figure :**

Two concentric circles at M

$\overline{AB}$ and $\overline{AC}$ are two tangent-segments to smaller circle at D and H

, m (∠ BAC) = 70°

Prove that : (1) AB = AC (2) **Find :** m (∠ DMH)

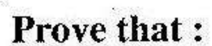


[b] In the opposite figure :

ABC is a triangle inscribed in a circle ,

$\overleftrightarrow{AD}$ is a tangent to a circle at A

, $X \in \overline{AB}$, $Y \in \overline{AC}$, $\overline{XY} \parallel \overline{BC}$



Prove that :

$\overleftrightarrow{AD}$ is a tangent to the circle which passes through the points A , X , Y

22 South Sinai Governorate



Answer the following questions :

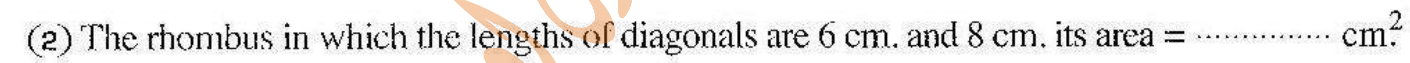
1 Choose the correct answer from the given ones :

(1) **In the opposite figure :**

$\overline{AB}$ is a diameter in the circle M

m (∠ ABC) = 50° , then m $(\overset{\frown}{BC})$ = ...°

(a) 40 (b) 50 (c) 80 (d) 100



(2) The rhombus in which the lengths of diagonals are 6 cm. and 8 cm. its area = ... cm^2

(a) 12 (b) 14 (c) 24 (d) 48

(3) If M is a circle of radius length r cm. , then the length of the simicircle = ... cm.

(a) $2\pi r$ (b) $\frac{1}{4}\pi r$ (c) $\frac{1}{2}\pi r$ (d) πr

(4) The longest chord in the circle is called ....

(a) diameter. (b) tangent. (c) secant. (d) radius.

(5) The image of the point (2 , 3) by rotation R (O , 180°) is the point ....

(a) (2 , 3) (b) (– 2 , 3) (c) (2 , – 3) (d) (– 2 , – 3)

(6) The sum of measures of the two opposite angles in the cyclic quadrilateral equal ....°

(a) 180 (b) 120 (c) 100 (d) 30

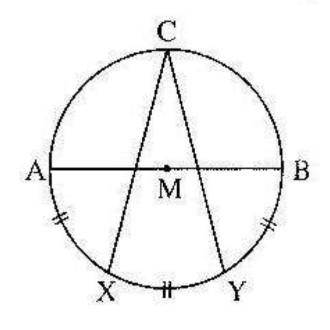
---

2 [a] In the opposite figure :

$\overline{AB}$ is a diameter in the circle M

, the length of $(\overset{\frown}{AX})$ = the length of $(\overset{\frown}{XY})$ = the length of $(\overset{\frown}{BY})$

find with proof : m (∠ C)



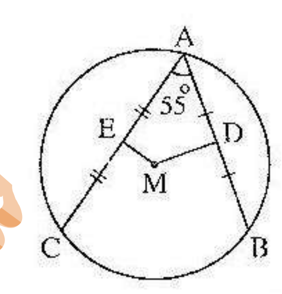
[b] **In the opposite figure :**

$\overline{AB}$ and $\overline{AC}$ are two chords in the circle M

, D is the midpoint of $\overline{AB}$ and E is the midpoint of $\overline{AC}$,

m (∠ BAC) = 55°

Find with proof : m (∠ DME)

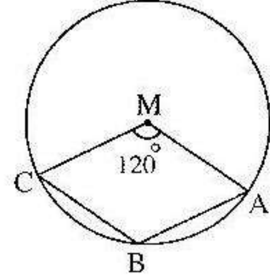


---

3 [a] **In the opposite figure :**

M is a circle and m (∠ AMC) = 120°

Find with proof : m (∠ ABC)



[b] Two circles M and N with radii lengths of 7 cm. and 4 cm. respectively

Show the position of each of them respect to the other in the following cases :

(1) MN = 8 cm. (2) MN = 3 cm. (3) MN = 12 cm.

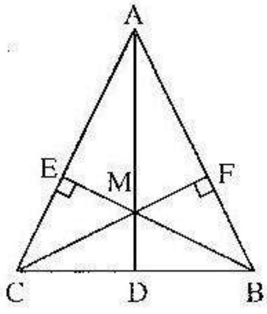
---

4 [a] **In the opposite figure :**

Δ ABC , $\overline{BE} \perp \overline{AC}$, $\overline{CF} \perp \overline{AB}$

$\overrightarrow{AM} \cap \overleftrightarrow{BC} = \{D\}$

Prove that : MDCE is a cyclic quadrilateral.

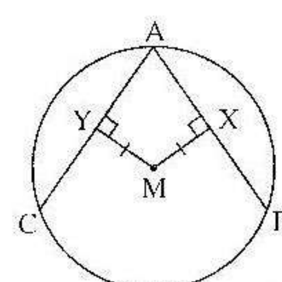


[b] **In the opposite figure :**

M is a circle , $\overline{AB}$ and $\overline{AC}$ are two chords ,

$\overline{MX} \perp \overline{AB}$, $\overline{MY} \perp \overline{AC}$, AB = 6 cm. , MX = MY

Find with proof : The length of $\overline{AY}$



---

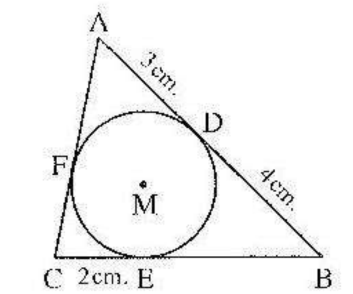
5 [a] **In the opposite figure :**

M is an inscribed circle in the triangle ABC

and touches its sides at D , E and F

, AD = 3 cm. , CE = 2 cm. , BD = 4 cm.

Find with proof : The perimeter of Δ ABC

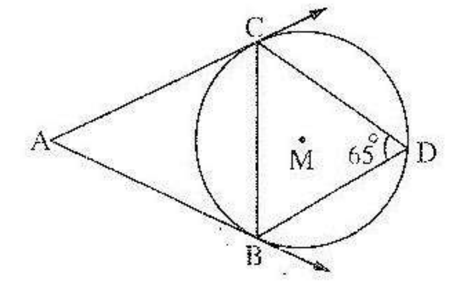


[b] **In the opposite figure :**

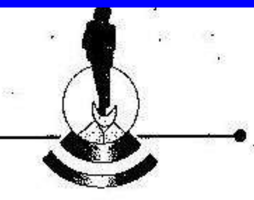
$\overrightarrow{AB}$ and $\overrightarrow{AC}$ are two tangents of the circle M

, m (∠ D) = 65°

Find with proof : m (∠ A)



23 Red Sea Governorate



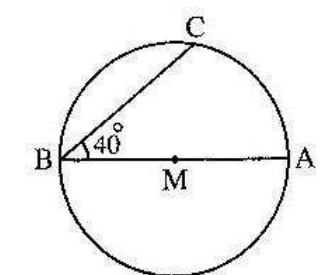
Answer the following questions :

1 Choose the correct answer from the given ones :

(1) Number of the circles that pass through three non-collinear points equals ....

(a) zero (b) one (c) three (d) an infinite number

(2) **In the opposite figure :**



$\overline{AB}$ is a diameter in the circle M

, m (∠ ABC) = 40° , then m ($\overset{\frown}{BC}$) = ...

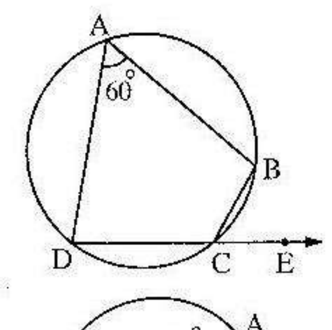
(a) 40° (b) 50°

(c) 90° (d) 100°

(3) If the two circles M and N are touching externally , their radii lengths are 9 cm. , r cm. , and MN = 14 cm. , then r = ... cm.

(a) 5 (b) 7 (c) 10 (d) 23

(4) **In the opposite figure :**



If m (∠ BAD) = 60° , then m (∠ BCE) = ...

(a) 30° (b) 60°

(c) 80° (d) 120°

(5) **In the opposite figure :**

If $\overrightarrow{BD}$ is a tangent to the circle M

, m (∠ BAM) = 25°

, then m (∠ ABD) = ...

(a) 25° (b) 50° (c) 65° (d) 120°

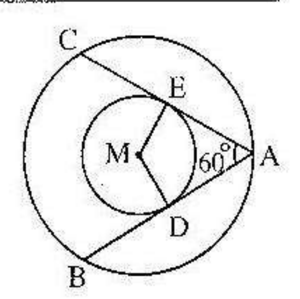
(6) Circumference of a circle is 6 π cm. , L is a straight line at a distance of 3 cm. from its centre , then L is ....

(a) a tangent to the circle. (b) a secant to the circle.

(c) outside the circle. (d) the diameter to the circle.

---

2 [a] **In the opposite figure :**



Two concentric circles M ,

$\overline{AB}$, $\overline{AC}$ are two tangents to the smaller circle , m (∠ A) = 60°

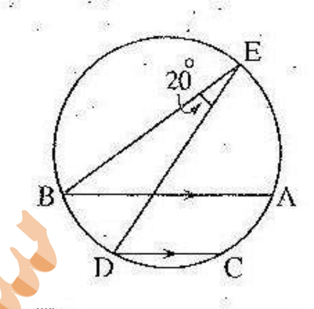
(1) **Find :** m (∠ DME) (2) **Prove that :** AB = AC

[b] In the opposite figure :

$\overline{AB}$, $\overline{CD}$ are two parallel chords

, m (∠ BED) = 20°

Find : m $(\overset{\frown}{AC})$



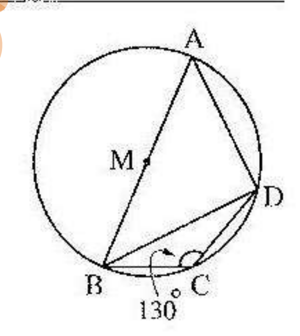
3 **[a] In the opposite figure :**

ABCD is a quadriteral inscribed in a circle M

where M ∈ $\overline{AB}$

, m (∠ BCD) = 130°

Find : m (∠ A) , m (∠ ABD)



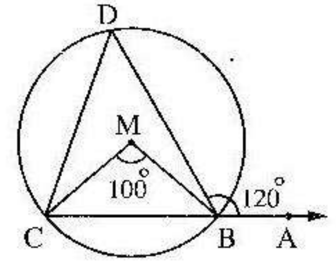
[b] In the opposite figure :

In the circle M :

m (∠ BMC) = 100°

, m (∠ ABD) = 120°

Find with proof : m (∠ DCB)



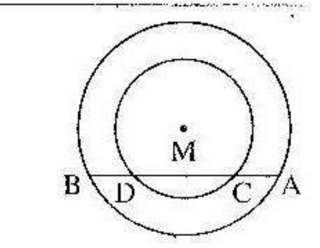
4 **[a] In the opposite figure :**

Two concentric circle M

, $\overline{AB}$ is a chord in the large circle intersecting

the small circle at C and D

Prove that : AC = BD

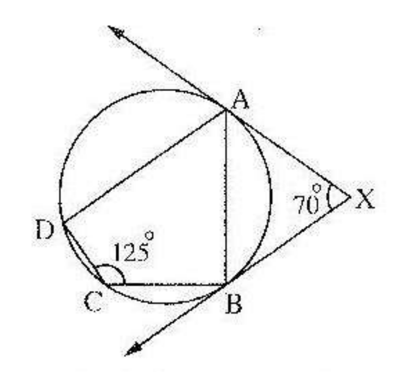


[b] In the opposite figure :

$\overrightarrow{XA}$ and $\overrightarrow{XB}$ are two tangents to a circle at A and B

, m (∠ AXB) = 70° , m (∠ DCB) = 125°

Prove that : $\overrightarrow{AB}$ bisects ∠ DAX

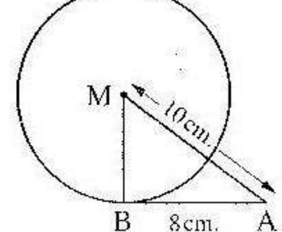


5 **[a] In the opposite figure :**

$\overline{AB}$ is a tangent to a circle M at B

, AB = 8 cm. , AM = 10 cm.

Find : The area of Δ ABM

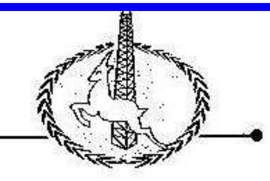


[b] ABC is a triangle inscribed in a circle , $\overleftrightarrow{BD}$ is a tangent to the circle at B

, X ∈ $\overline{AB}$, Y ∈ $\overline{BC}$ where $\overline{XY}$ // $\overline{BD}$

Prove that : AXYC is a cyclic quadrilateral.

24 Matrouh Governorate



Answer the following questions : (Calculator is allowed)

1 Choose the correct answer :

(1) The perimeter of the square whose area is 81 cm^2 is ....

(a) 24 cm. (b) 8 cm. (c) 9 cm. (d) 36 cm.

(2) The two opposite angles in the cyclic quadrilateral are ....

(a) equal. (b) complementary. (c) supplementary. (d) alternate.

(3) ABC is a triangle where $(AB)^2 = (AC)^2 + (BC)^2$, m (∠ B) = 40° , then m (∠ A) = ...

(a) 40° (b) 50° (c) 90° (d) 130°

(4) The measure of the arc which represents $\frac{1}{3}$ the measure of the circle equals ....

(a) 60° (b) 90° (c) 120° (d) 240°

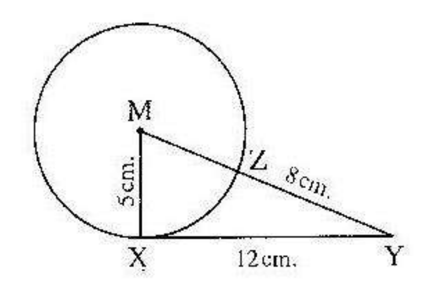
(5) The area of the triangle whose base length is 10 cm. and its height is 6 cm. equals .... cm^2

(a) 6 (b) 10 (c) 30 (d) 60

(6) If the two circles M , N are touching internally , the radius length of one of them is 3 cm. , and MN = 8 cm. , then the radius length of the other circle equals ....

(a) 5 cm. (b) 6 cm. (c) 11 cm. (d) 12 cm.

2 [a] In the opposite figure :



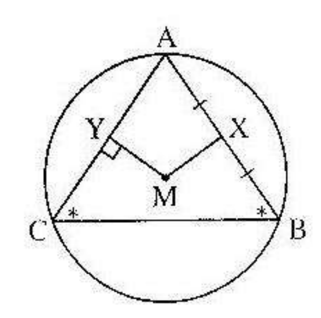
M is a circle whose radius length is 5 cm.

, XY = 12 cm , $\overrightarrow{MY}$ ∩ the circle M = {Z}

and ZY = 8 cm.

Prove that : $\overleftrightarrow{XY}$ is a tangent to the circle M at X

[b] In the opposite figure :



Δ ABC is inscribed in the circle M

, in which m (∠ B) = m (∠ C)

, X is the midpoint of $\overline{AB}$, $\overline{MY} \perp \overline{AC}$

Prove that : MX = MY

3 [a] Prove that : The measure of the angle of tangency is equal to the measure of the inscribed angle subtended by the same arc.

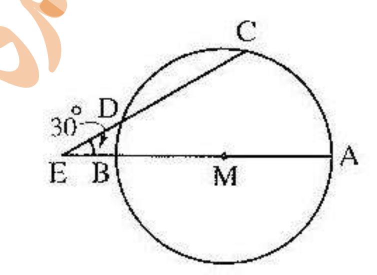
[b] ABCD is a quadrilateral drawn in a circle , F ∈ $\overline{AB}$

, draw $\overrightarrow{FE}$ // $\overline{CB}$ to cut $\overline{CD}$ at E , $\overrightarrow{DF} \cap \overrightarrow{CB} = \{X\}$

Prove that : (1) AFED is a cyclic quadrilateral. (2) m (∠ BXF) = m (∠ EAD)

---

4 **[a] In the opposite figure :**



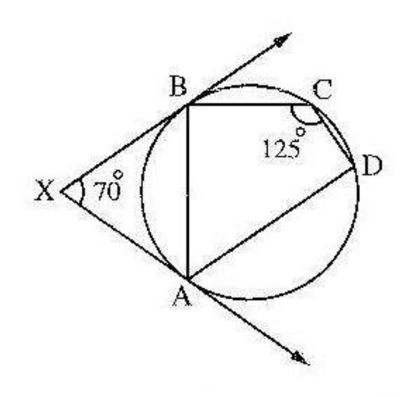
$\overline{AB}$ is a diameter in the circle M

, $\overrightarrow{AB} \cap \overrightarrow{CD} = \{E\}$

, m (∠ AEC) = 30° , m ($\overset{\frown}{AC}$) = 80°

Find : m ($\overset{\frown}{CD}$)

[b] In the opposite figure :



$\overrightarrow{XA}$ and $\overrightarrow{XB}$ are two tangents to the circle at A and B

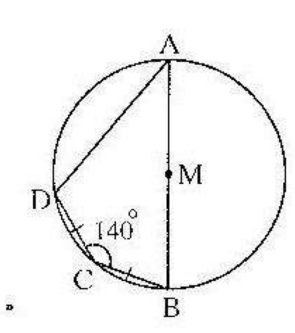
, m (∠ AXB) = 70° , m (∠ DCB) = 125°

Prove that : $\overrightarrow{AB}$ bisects ∠ DAX

---

5 **[a]** Mention three cases of the cyclic quadrilateral.

[b] In the opposite figure :



ABCD is a quadrilateral inscribed in the circle M

where M ∈ $\overline{AB}$, CB = CD

, m (∠ BCD) = 140°

Find : (1) m (∠ A) (2) m (∠ D)